# EFFECT OF COVID-19 STRINGENT CONTAINMENT MEASURES ON HOUSEHOLD INCOMES IN UASIN GISHU COUNTY, KENYA

BY

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# DECLARATION

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## DEDICATION

This research is dedicated to my parents Mr and Mrs Julius Talam who have continually made sacrifices for my wellbeing, my sisters for their prayers, emotional and financial support and to the Almighty God who has been my strength and divine inspiration in anything I do.

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## ABSTRACT

Pandemics are not a new occurrence, as they have transpired many times over the course of human history. However, the measures implemented by governments globally to halt the spread of Coronavirus Disease 2019 (COVID-19) led to restricted mobility of people and goods, which impacted business operations in Kenya. While COVID-19 containment efforts helped reduce coronavirus cases worldwide, household incomes were jeopardized due to the pandemic's effects on commercial activities. The study sought to analyze effect of COVID-19 stringent containment measures on household incomes in Uasin Gishu County, Kenya. The specific objectives were to evaluate the effect of stay at home requirement, workplace, and mobility restrictions on household incomes for the periods that the government gave the stringent containment measures. This study was grounded in the permanent income theory, life-cycle hypothesis, and relative income theory, which informed the specification framework. An explanatory research design was utilized, drawing on a population of 304,943 households and a sample of 399. Data was gathered via structured questionnaires administered to household heads using simple random sampling. Cronbach Alpha coefficients of household incomes, stay at home requirement, workplace restrictions and mobility restrictions were 0.895, 0.863, 0.823, and 0.722 respectively. The results were accepted as they were above the threshold of 0.7. Correlation results indicated a strong negative significant correlation between stay-at-home requirement and household income $(r = -0.570, p = 0.00 < 0.05)$. Workplace restrictions and household income had a negative and significant correlation $(r = -0.539, p = 0.00 < 0.05)$ and mobility restrictions and household income had a weak positive significant correlation $(r = 0.130, p = 0.009 < 0.05)$. From the model estimation, $ADJ.R^2 = 0.431$, $F\text{-statistic} = 101.537$ with a significant probability $0.00 < 0.05$ indicated that the model used was robust and the explanatory variables fit the study. OLS results indicated that stay-at-home requirement coefficient had a negative significant effect $(\beta = -0.343, p = 0.00 < 0.05)$; workplace restriction coefficient had a negative and significant effect $(\beta = -0.366,\ p = 0.00 < 0.05)$ on household income. The results implied that a unit increase in stay at home requirement coefficient and unit increase in workplace restrictions coefficient resulted in a reduction of 0.343 units and 0.366 units in household incomes respectivelyThe study concluded that the COVID-19 pandemic negatively impacted household incomes in Uasin Gishu County, Kenya, indicating that the restrictions put in place to contain the outbreak extensively resulted in job losses and income reduction. The study recommends revising the COVID-19 restrictions and regulations to allow people and businesses to operate within the stipulated requirement hence promoting household incomes.

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## ABBREVIATIONS

| | |
|---|---|
| **ARTIs:** | Acute Respiratory Tract Infections |
| **CEST**: | Central European Summer Time |
| **EVD:** | Ebola Virus Disease |
| **MERS-CoV:** | Middle East Respiratory Syndrome coronavirus |
| **NERC**: | National Emergency Response Committee |
| **SARS:** | Severe Acute Respiratory Syndrome |
| **SARS-CoV-2:** | Severe acute respiratory syndrome coronavirus-2 |
| **VAT:** | Value Added Tax |
| **WHO**: | World Health Organization |

## DEFINITIONS OF TERMS

**COVID-19**: Coronavirus disease 2019 (COVID-19) is a contagious respiratory infection caused by a new coronavirus strain that causes sickness to persons.

**Economy**: State of a nation in terms of production and consumption of goods and services and the supply and demand of money. The activities involving the production and consumption of goods and services serve to fulfill the needs of the people operating within an economy

**Household**: A group of people living in one dwelling or under one roof.

**Income**: Money that individuals receive in exchange for their work, producing a product or service which could be from employment or business.

**Household Income**: It is the saving and consumption opportunity gained by an entity within a specific time frame. It includes agricultural wage income, total of farm income, non- agricultural wage income, rental or property income or money transfers.

**Stay at Home Requirement:** An order by the government and health institutions requiring people not to leave their houses or homes to stop the spread of COVID-19

**Mobility Restriction:** An order by the government and health institutions that require people not move from one region or county to another to reduce the spread of COVID-19.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Overview

This chapter provides the background of the study, research problem, objectives of the study, research hypothesis, significance, and scope of the study.

## 1.2 Background of the Study

Income refers to receipts in kind or in monetary received at annual or frequent intervals for current consumption Carletto *et al*., (2007). Income has a significant global impact on individual consumption and spending as the degree of consumption is mostly determined by it. According to Kilic *et al.,* (2009), rich people frequently spend more than poor people, and they can purchase items that the latter cannot. Household income, on the other hand, is the aggregate net income of all members of a certain household. History has shown that the onsets of crises such as pandemics are a threat to household incomes through their effects on income-generating activities of households.

Pandemics are not a new phenomenon as they have occurred at different times in human history. In the past, there has been the Spanish Flu Influenza, the Black Death, Ebola, and SARS pandemics. The 1918 Spanish Flu was one of the worst pandemics ever experienced (Kaur *et al*., 2020). This Flu Pandemic occurred in three main waves and infected over a third of the world's population. The economic effects of the Spanish Flu Influenza were, to a large extent, influenced by the measures used to contain its spread (Bishop, 2020). Most of the measures adopted during the Spanish Flu pandemic were similar to those applied in the COVID-19 pandemic (Bishop, 2020). For instance, during the Spanish Flu pandemic, there was the closure of

schools, churches, hotels, and entertainment avenues. Besides, movement by public means was restricted, national borders were closed, and people were required to wear masks and practice regular hand washing and disinfection.

Another pandemic in human history, the Black Death, was extremely devastating. This global epidemic struck Europe and Asia in the Mid 1300s. The Black Death first originated in China in 1334 and arrived in Europe in 1347, killing up to 60% of people in Europe (Huremović, 2019). In the short run, the plague led to a breakdown in economic activities and markets (Jedwab *et al.*, 2021). Although today cases of the Black Death disease are still there, the presence of an antibiotic to treat it and the application of modern sanitation and public health practices have greatly minimized its impact.

The Severe Acute Respiratory Syndrome (SARS), an epidemic first identified in China in 2002, greatly harmed the Asian state's economy as it depressed the tourism sector and retail sales. It is projected that during this pandemic, the Asian state lost between 12 to 18 Billion USD (Qiu *et al.*, 2018). For SARS, the strategies used to contain the virus spread were limited to public health measures (Anderson et al., 2004). The Ebola Virus Disease (EVD), a rare, deadly infection in humans and non-human primates was discovered in 1976 in the Democratic Republic of Congo by Dr. Freudendal-Pedersen, & Kesselring (2021). The virus is spread largely through the exchange of body secretions and blood. There have been 29 outbreaks of Ebola Virus disease since it was first reported in West and East African regions (Coltart *et al.*, 2017). Owing to the Ebola Crisis, economic activities in the affected countries were depressed with declining market sales and lower activities in hotels and restaurants (Africa, 2015).

On December 8, 2019, the Chinese government declared that medical professionals were treating a significant number of new virus cases, known as the coronavirus disease 2019 (COVID-19) (Jernigan *et al.,* 2020). Since then, COVID-19, a new strain of SARS (SARS-CoV-2), has grown into a global epidemic that has spread into numerous countries. The recent COVID-19 pandemic is a far more severe episode since the 1918 Spanish Influenza pandemic (Brodeur *et al.,* 2020). This pandemic has imposed huge costs on countries' economies through its effects on the productive sectors. Private sectors which contribute significantly to economic growth have been adversely affected, and this negative impact trickled down to household welfare. Members of households have been impacted by the COVID-19 pandemic through diminished employment prospects and decreased earnings. Joblessness has almost doubled in comparison to the pre-COVID level (Githinji & Omwoha, 2021). Nearly 1 in 3 businesses operated by households are not functioning presently, with incomes decreasing across all industries (Githinji & Omwoha, 2021).

As COVID-19 appears to have originated in China, frequently called the "factory of the world", the pandemic's effects on supply chains are substantial (Baldwin & Tomiura, 2020). Imports from China into Kenya were projected to reduce by US$ 580 million in the first two months of 2020 (Lucas, 2020). According to Nouvellet *et al.,* (2021), containment measures, by limiting movement, have largely lowered the infection rates. The stringent containment measures adopted in New Zealand, restraints on gatherings and public events adopted when cases were in single digits, followed by school and workplace closures as well as stay-at-home orders just a few days later, reduced infection numbers by approximately 90% in relation to a standard with no containment measures (Wilson, 2020).

In the United States, cities and counties issued mandatory stay-at-home orders in an attempt to slow down the spread of COVID-19 (Mervosh *et al.,* 2020). Similar to high-income nations, many governments in Sub-Saharan Africa implemented strict lockdown regulations to halt the spread of the coronavirus. As a result of globalization and the interconnectedness of the business world presently, the measures taken by governments throughout the world to stop the spread of COVID-19 resulted to reduced movement of goods and persons, which had an impact on Kenyan firms' regular operations (Kansiime *et al.,* 2021). COVID-19 measures put in place to limit coronavirus spread have affected businesses in terms of sales reduction, disturbance of transport logistics, and a rise in transportation cost are some of the main effects (Kansiime *et al.,* 2020). COVID-19 pandemic has had adverse effects on the business financial performance, which reported decreasing sales, little productivity because of disturbed supply chains, and reduced working hours caused by countrywide curfew. The increased cost of transport and the rise in prices of goods and services have similarly affected the financial health of businesses (Wangari, 2021).

The COVID-19 pandemic has seen Governments adopt tax policies to lessen the pandemic's effects. The government of Kenya imposed 100% weaver on income taxes on persons earning less than KES 24,000 per month. Income and corporation taxes were reduced by 5% from 30% to cushion individuals against excessive taxes (Ondicho, 2021). Besides tax policy adjustments, the COVID-19 period saw the Government of Kenya adopt COVID-19 stringent containment measures. These measures include a stay-at-home requirement, workplace closure, restriction to movement, ban on public social gatherings, and strict guidelines for essential social gatherings such as funerals (Ouma *et al.,* 2020).

One of the biggest problems the globe is currently facing is the COVID-19, which poses a threat to the advancements made in the travel and tourism sector (Higgins, 2020). According to Suleiman (2020), as a result of the COVID-19 pandemic, 45 percent of Kenyan tourism enterprises predicted a revenue loss of more than 2.5 million Kenyan shillings in the first half of 2020. About 15% of enterprises referred to a loss of revenue exceeding Ksh 500 thousand, while about 23% reported losing between Ksh 500 thousand and Ksh 1 million. Household incomes being a vital contributor to economic growth in Kenya, and considering the effects of the government-imposed containment measures makes household income a rich area for study.

### 1.2.1 History of the Corona Virus Disease 2019

The coronaviruses are a virus family composed of hundreds of distinct viruses. There are only six known viruses in the coronavirus family that can infect people with mild to severe respiratory tract illnesses; 229E, NL63, OC43, HKU1, SARS-CoV, and MERS-CoV (Yin & Wunderink, 2017). The Middle East Respiratory Syndrome Coronavirus (MERS-CoV) and the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) both arose in human populations from animal reservoirs in November 2002 and September 2012, respectively, and caused severe respiratory disease with significant mortality rates (Yin & Wunderink, 2017).

According to Sharma *et al.*, (2020), a new Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) causing coronavirus disease 2019 (COVID-19), an infectious disease, has emerged. The virus was identified and first reported in December 2019 in Wuhan, China. The World Health Organization declared a global pandemic on March 11, 2020, due to the rapid global spread of the extremely

pathogenic SARS-CoV-2 virus. More than 2.1 million confirmed cases of COVID-19 were reported by the WHO as of 10:00 a.m. CEST on April 18, 2020, with 142,229 fatalities (Cucinotta & Vanelli, 2020). With over 30,000 confirmed cases, the nations most affected by SARS-CoV-2 are the United States, Spain, Italy, Germany, France, the United Kingdom, China, Iran, Turkey, Belgium, the Russian Federation, Canada, and Brazil (Lone & Ahmad, 2020). However, the number of cases is increasing globally, posing a serious risk to public health. Acute Respiratory Tract Infections (ARTIs) are caused by viruses that are exceedingly contagious and/or have caused a large number of deaths (Goikhman *et al.*, 2020).

COVID-19 is a highly contagious viral infection caused by the novel coronavirus SARS-CoV-2. This coronavirus likely originated in bats before being transmitted to humans, similar to SARS-CoV-1 and MERS-CoV (Dhama et al., 2020). While the exact transmission path is unknown, human-to-human spread has been widely documented (Khan et al., 2020). The disease first emerged in Wuhan, China in December 2019 and rapidly spread globally (Khan et al., 2020). As of this writing, COVID-19 has infected millions and caused over a million deaths across 215 countries (Khan et al., 2020). There is currently no licensed vaccine or proven treatment, though numerous candidates are being researched and evaluated (Khan et al., 2020). The rapid spread and lack of proven interventions make COVID-19 a serious public health threat worldwide. Control efforts have focused on preventive measures like social distancing while researchers urgently work to develop effective therapies and vaccines.

### 1.2.2 COVID-19 in Kenya

Kenya confirmed its first case of COVID-19 on March 13, 2020 in a tourist returning from London (Nanyingi, 2020). By late April, Kenya reached 363 confirmed cases and 14 deaths across 13 counties, with 58% local transmission and 42% imported cases (Nanyingi, 2020). The initial outbreak started in Nairobi before spreading to other areas like Mombasa (Nanyingi, 2020). As of December 2021, Nairobi continued to lead in total cases followed by several other counties (Statista, 2022). In the early months, approximately 65% of cases were male and 35% female (Bedson et al., 2021). Kenya's multi-sector National Emergency Response Committee coordinates the COVID-19 response by establishing case management, infection control, and surveillance protocols and designating specific health facilities, labs, and isolation centers for COVID-19 (Nanyingi, 2020). Targeted public health measures have aimed to control the outbreak across Kenya's unique sociocultural context.To contain COVID-19 spread, the Kenya Medical Research Institute (KEMRI) and Ministry of Health Emergency Operations Center (EOC) implemented a "Test, Track and Treat" (TTT) strategy. This led to contact tracing of 3,421 individuals, testing of 18,394 people, and isolation of suspected patients. Decentralized targeted testing of high-risk populations including healthcare workers, security officers, truck drivers and public transport workers was proposed.

To slow nationwide transmission, Kenya implemented numerous containment measures including closing schools, enforcing quarantines, imposing a nationwide curfew, shutting clubs, restaurants and nonessential businesses, suspending international flights, enacting partial lockdowns in five hotspots, and closing international borders (Nanyingi, 2020). Public health messaging promoted working from home, banning public gatherings, and reducing public transport use. Hand

sanitizer, soap and water were made available in public spaces with regular disinfection of premises (Oloruntoba, 2021). To aid low-income groups, the government provided economic relief through value-added tax reductions on certain goods and fiscal stimuli enabled by philanthropic organizations' contributions.

### 1.2.3 Economic Effect of COVID-19 in Kenya

Kenya was already facing economic challenges when the first COVID-19 case appeared on March 13, 2020, but the pandemic exacerbated these difficulties. Like many countries, Kenya has experienced substantial economic losses from COVID-19 in terms of GDP and jobs (Odhiambo et al., 2020). Indicators of the virus's detrimental economic impact include poor financial market performance, supply chain disruptions, currency volatility, reduced remittances, and shifts in monetary and fiscal policies. While the full effects are still unfolding, COVID-19 has clearly compounded Kenya's pre-existing economic troubles.

The COVID-19 lockdowns and curfews have disrupted global supply chains, putting pressure on the Kenyan shilling and causing foreign currency shortages. With fewer exports, the shilling has become fragile, losing 5% of its value since early March (Erkekoglu et al., 2020). This currency depreciation makes Kenyan exports cheaper, which can lead to further devaluation. Overall, the weaker shilling is detrimental for Kenya's economy, especially the critical tourism sector (Wanjala, 2020).

Diaspora remittances were expected to decrease as the global economy deteriorated. This will result in a decrease in the recipients' disposal income, which will have a detrimental impact on economic advancement (Ozili & Arun, 2020). This, together with rising expenses on household goods overseas, may lead to a more decrease in the amount of foreign money expatriated into Kenya's economy. Diaspora remittances to

Kenya totaled USD 2.546 billion in 2019, compared with USD 2.453 billion in 2018, making them the largest source of forex (Kipkoech, 2020). Despite the effects of the COVID-19 pandemic, more remittances have continued to be recorded in Kenya. The rise in remittances into Kenya is due to financial innovations that have created conventional channels enabling transactions to be possible through mobile phones (Gammadigbe, 2021). For instance, families could still be able to send and receive money during lockdowns and restrictions to movement.

The spread of the Coronavirus has disrupted international supply chains, putting Kenya, which is highly dependent on imports, in trouble. China's exports, for example, make for almost 35% of Kenya's overall imports (Miriam *et al.,* 2016). The majority of the country's manufacturing and production sectors, which depend on imports as inputs, have been badly hampered as a result of curfews and partial lockdowns. This has had a huge effect on Kenya's economic advancement, with several employees consequently losing their jobs.

In March 2020, Kenya's Central Bank reduced the benchmark interest rate from 8.25% to 7.25% to counter economic impacts of COVID-19 (Siringi, 2021). This rate cut intended to incentivize banks to lend more money and stimulate economic activity. However, increased lending may be ineffective if underlying economic conditions like declining consumer demand continue deteriorating. Individuals facing job loss or reduced incomes lack purchasing power, even with greater access to credit. While expansionary monetary policy aims to boost growth, its impact depends on broader economic factors shaped by the pandemic's disruption. If economic uncertainty persists, lower interest rates alone may provide limited stimulus. Kenya

faces a challenge in balancing market stability and economic support until COVID-19 is contained.

### 1.3 Statement of the Problem

More than two-thirds of the households in East African countries experienced household income shocks because of the COVID-19 pandemic catapulted by the COVID-19 stringent containment measures imposed by the respective Governments (Kansime *et al*., 2021). In line with the estimates from epidemiological models, finding show strong proof that containment measures, which include; stay at home requirement, workplace closures, mobility restrictions, gatherings, and public events restrictions, significantly reduced the number of COVID-19 infections (Deb *et al*., 2020). According to Ozili (2020), the COVID-19 pandemic and lockdown restrictions had adverse effects on African countries.

The stringent COVID-19 containment measures enacted by the Kenyan government had significant impacts on household incomes. Kithiia et al. (2020) found that mobility restrictions in the coastal city of Mombasa disrupted people's daily activities and resulted in financial losses. Across Kenya, the pandemic strain caused business failures, debt and mortgage defaults, layoffs, and lack of credit access as financial institutions were impacted by credit defaulters and declining cash flows and deposits. Business owners nationwide experienced these economic hardships during the pandemic containment period. The movement limitations and broader economic turmoil clearly reduced incomes for many Kenyan households (Hira et al., 2020).

To control coronavirus spread, the Kenyan government instituted a nationwide stay-at-home directive, requiring all employers to enable remote work except for essential services that could not be delivered remotely (Muragu et al., 2021). With 8,583

confirmed COVID-19 cases as of December 2021, Uasin Gishu County was among the hardest hit in Kenya (Statista, 2022). As home to the nation's fastest growing town, Uasin Gishu County significantly contributes to Kenya's economic growth (Badoux et al., 2018). Given the county's economic importance and high infection rate, further inquiry into the impacts of Kenya's COVID-19 containment measures on Uasin Gishu's household sector is warranted. While some individuals may have greater financial capacity to withstand the challenges of government restrictions, others may lack resources to weather the storm. This study aimed to determine the effects of COVID-19 containment policies on household incomes specifically in Uasin Gishu County. The county's economic significance and COVID-19 burden highlight the need to examine households' financial resilience to nationwide restrictive measures.

## 1.4 Objectives of the Study

### 1.4.1 General Objective

The general objective of the study was to analyze the effect of Corona Virus Disease 2019 (COVID-19) stringent containment measures on household income in Uasin Gishu County, Kenya.

### 1.4.2 Specific Objectives

The study was guided by the following specific objectives:

1. To examine the effect of stay at home requirement on household income in Uasin Gishu County, Kenya.
2. To establish the effect of workplace restrictions on household income in Uasin Gishu County, Kenya.

3. To determine the effect of mobility restrictions on household income in Uasin Gishu County, Kenya.

### 1.5 Hypothesis of the Study

The study was guided by the following hypotheses:

**$H_{01}$**: There is no significant effect of stay-at-home requirement on household income in Uasin Gishu County, Kenya.

**$H_{02}$**: There is no significant effect of workplace restrictions on household income in Uasin Gishu County, Kenya.

**$H_{03}$**: There is no significant effect of mobility restrictions on household income in Uasin Gishu County, Kenya.

### 1.6 Significance of the Study

This study's findings could help households in Uasin Gishu County, Kenya better understand how COVID-19 containment measures like stay-at-home orders, workplace closures, and mobility restrictions have impacted their income. With this knowledge, households can develop targeted coping strategies and survival plans tailored to the specific economic effects of each type of restriction.

The research findings could also provide vital information that would help the county government of Uasin Gishu, particularly policymakers, program planners, and program implementers in the county to formulate policies that would help household members maintain a steady income amidst the COVID-19 pandemic.

Policymakers would also be empowered to come up with a strong instrument that can be utilized by individuals to deal with the effect of Covid-19 containment measures on household income.

In addition, academicians and researchers would benefit greatly from this study, particularly those intending to pursue similar studies. The academicians could use the study as reference material.

### 1.7 Justification of the Study

This research investigated the financial impact of COVID-19 containment policies on households in Uasin Gishu County, Kenya. Stay-at-home orders, mobility limits, and workplace closures were implemented to reduce virus transmission but also disrupted incomes. By assessing how these measures affected household earnings, the study aimed to empower families with knowledge to make financially informed decisions during the pandemic. Additionally, the data and suggestions can help the Uasin Gishu government enhance its ability to safeguard resident incomes when imposing public health restrictions for infectious diseases.

### 1.8 Scope of the Study

This research focused specifically on how COVID-19 containment measures impacted household incomes in Uasin Gishu County, Kenya. Uasin Gishu was selected as the study site because it had one of Kenya's highest number of confirmed COVID-19 cases, with over 8,500 as of December 2021 (Statista, 2022). Additionally, Uasin Gishu is home to Eldoret, one of Kenya's fastest growing towns (Badoux et al., 2018). With a substantial outbreak and rapidly expanding population, Uasin Gishu provided an important case study into how public health restrictions affect household finances in an urbanizing county.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Overview

This chapter presents a review of concepts and theory, empirical review, critical review, and conceptual framework on the effect of the COVID-19 stringent containment measures on household income.

## 2.2 Concepts of the Study

Various concepts relating to the study are discussed, including household income, COVID-19 response measures, and the relationship between the two concepts.

### 2.2.1 Concept of Household Income

Income refers to receipts in kind or in monetary received on a yearly or more frequent basis for the purpose of satisfying one's immediate needs Carletto *et al*., (2007). It is the most vital factor globally that affects personal consumption expenditure. Income mostly determines the level of consumption. Rich individuals often spend more than the poor persons in society (Kilic *et al*., 2009).

Household income is total amount of money earned by all members of a single household on a yearly basis or more frequently. It does not take into account irregular or one-time payments and windfall earnings. The sources of household income include income from employment (both self-employment and paid), property incomes, transfers received, incomes from the production of household services for own usage, and social transfers in kind (Nolan *et al.,* 2019). Income at the household level is the single most vital factor in determining economic well-being. Mishra et al (2002).

### 2.2.2 Concept of COVID-19 Response Measures

The new Coronavirus Disease (COVID-19), which was found in Wuhan, China, in December 2019, threatens to undo global and domestic progress in reducing poverty. The World Health Organization (WHO) labeled the novel coronavirus illness (COVID-19) a pandemic in March 2020, predicting that its effects will last longer than expected (Nafula *et al.,* 2020). As a result, the sickness is expected to have long-term economic and societal consequences, resulting not just from the disease's direct and indirect effects but also from government actions. Accordingly, many countries have revised their GDP predictions downward to account for COVID-19's multiple negative consequences (Nafula *et al.,* 2020).

While COVID-19 has affected every economic sector, some industries are bearing a disproportionate impact. Sectors projected to face the most severe immediate consequences include transportation, tourism, retail and wholesale trade, personal services, entertainment, manufacturing, agriculture, information technology, finance, and professional services (Nafula et al., 2020). Evident repercussions at the firm level include the closing of businesses, a fall in demand for products and services, a loss of cash flow for businesses, a decline in employees' production and productivity as a result of working from home, issues procuring vital raw materials for manufacturing, and difficulties in planning and shipping of goods (Nafula et al., 2020).

As a result of illness, increased underemployment, and/or job loss, businesses and their employees have experienced a loss of earnings. Businesses and the workers that work for them have both faced a loss of income or a fall in income as a consequence of the illness, increasing underemployment, and/or job loss. According to a recent poll undertaken by the Kenya National Bureau of Statistics (KNBS), 43.2 percent of

people over the age of 18 had lost employment opportunities by the first week of May 2020. (Nechifor *et al.*, 2021). The majority blamed the government for imposing lockdown and stay at home requirements. For a country like Kenya, where the poor made up 36.1 percent of the population in 2015/16, the situation is even worse at the level of the household (Nafula *et al.*, 2020). As a result, the outbreak's economic and social consequences are high, necessitating a re-evaluation of some policy actions required to offer suitable coping and recovery tools in response to the pandemic and to protect both the population and the economy from the negative effects of the outbreak.

### 2.2.3 COVID-19 Response Measures and Household Income

The implementation of these harsh regulations as COVID 19 reaction measures has unwittingly disrupted people's lives, resulting in large household income losses globally. In Senegal, individuals reported below-average income during the onset of the pandemic (Janssens *et al.*, 2021). In East Africa, the COVID-19 pandemic impacted livelihoods causing numerous shocks that resulted in extensive poverty, starvation, and malnourishment (Kansiime *et al.*, 2021). The COVID-19 pandemic is projected to impact East Africa through three main channels: declining incomes, especially for informal workers relying on daily wages; reduced remittances from abroad; and disruptions to food supply chains (Demeke & Kariuki, 2020; ILO, 2020; Obayelu et al., 2021). With limited work-from-home options, income diversity, and social safety nets, households across the region face heightened vulnerability to income and food insecurity. Informal workers with hand-to-mouth livelihoods are being acutely affected by lockdowns. Remittance declines further hamper households. Meanwhile, supply chain issues raise food access concerns. Weak government welfare systems in many African nations provide little buffer for families facing

earnings drops that could severely impact nutritional status (Bailey & Turner, 2002). Pandemics like COVID-19 can broadly impact households, governments, and businesses through increased costs, higher healthcare spending, and workforce reductions from illness and death (Ibn-Mohammed et al., 2021). Across the food system, COVID-19 restrictions have created challenges in production, distribution, processing, and consumption (Siche, 2020; Torero, 2020). In addition to this, these restrictions have resulted in damage being done to perishable agricultural products like meat and vegetables. (Siche, 2020; Torero, 2020). Food costs are expected to rise in situations when shocks result in food gluts or shortages, with the most nutritious commodities likely to see the biggest jump. The advent of the COVID-19 pandemic has led to disruptions across food supply chains in East Africa, resulting in shortages and rising costs of food items. A report by UN-Habitat and WFP revealed that between April 2019 and April 2020, food prices increased by 8-10% in the region, with the sharpest rises seen for fresh produce like vegetables, meat, and fish due to distribution challenges (UN-Habitat and WFP, 2020).

The first confirmed case of COVID-19 in East Africa was reported in Kenya on March 13, 2020. Since then, the disease has continued spreading across the region, with new cases emerging daily. East African governments implemented various limitations to contain the disease's spread within their borders, in accordance with WHO rules and international practice (Kansiime *et al.*, 2021). Partially lockdowns and curfews were implemented around the country to restrict people's movement, as well as the interruption of global passenger flights, restriction on public meetings, and the shutting down of all educational facilities, hotels, restaurants, and churches.

To control COVID-19 spread, Uganda also implemented strict limitations on internal movement, with residents only permitted to leave home for essential purposes (Steverding & Margini, 2020). While cases were concentrated in certain hotspots like Kampala and border areas with Kenya, the mobility restrictions affected the entire country. Prior to the pandemic, Kenya's economy had been expanding at a rate of 5.4% in 2019, with projections of 6.2% growth for 2020 (Ndagara, 2020). However, the arrival of COVID-19 dramatically altered Kenya's outlook. With trade, tourism, and other key sectors hampered by lockdowns and mobility limits both locally and globally, economic contraction replaced pre-pandemic growth projections. The experience mirrors many African nations where COVID-19 rapidly reversed previous economic gains. Targeted stimulus and social support measures have aimed to counter the downturn, but full recovery hinges on controlling the public health crisis.

To mitigate COVID-19's social and economic impacts, the Kenyan government implemented immediate responses including closing schools, mandating quarantines for international arrivals, promoting social distancing and hygiene, and encouraging remote work (Kansiime et al., 2021). However, cases continued rising rapidly, prompting additional strict measures like passenger flight bans, public mask mandates, nightly curfews, regional lockdowns, and closures of bars and restaurants.

To provide economic relief during the COVID-19 pandemic, the Government of Kenya announced several tax cuts including: reducing the Pay As You Earn (PAYE) income tax rate from 30% to 25%; lowering the corporate income tax rate from 30% to 25%; and cutting the turnover tax rate from 3% to 1% for small and medium enterprises (SMEs) (Government of Kenya, 2020). Additionally, individuals earning monthly incomes under KES 24,000 were granted 100% tax relief.

The Government of Kenya announced a reduction in the value-added tax (VAT) rate from 16% to 14%, along with a KES10 billion (USD 95 million) allocation for the elderly, orphans, and other disadvantaged groups (Suleiman, 2020). In May 2020, the GOK launched a 53.7 billion shilling ($503 million) post-COVID-19 stimulus package to assist pandemic-affected businesses (Kansiime et al., 2021). This package provides credit guarantees, small business loans, and support for maintaining tourism facilities. As described by Kansiime et al. (2021), the Bank of Uganda's April 2020 Monetary Policy Statement mentioned credit relief measures to mitigate COVID-19 impacts, ensure financial sector stability, and facilitate lending during the pandemic. Implemented measures in Uganda include repayment holidays, debt relief up to 12 months, and reducing the central bank rate from 9% to 8% (BoU, 2020). To provide social protection, the Ugandan government also pledged food assistance for vulnerable workers whose daily operations would be disrupted by lockdowns.

These steps will help reduce the economic effects of COVID-19 on the residents of these two countries to some degree, but they are not a cure-all solution. According to the Uganda Bureau of Statistics (2018), the informal sector accounts for 81 percent of employment opportunities in urban areas and 90 percent of employment opportunities in rural areas. Meanwhile, in Kenya, the informal sector is estimated to provide 83.6 percent of total employment and daily wages for most urban informal settlement dwellers (Kansiime et al., 2021). As noted by Miller et al. (2020) and Ozili (2020), more favorable outcomes may have resulted from social assistance programs like direct cash and in-kind transfers to households, utility fee waivers, and support for wage earners impacted by restrictions. However, the relief measures were implemented after income losses had already occurred for many. Additionally,

logistical difficulties meant social protection was only partially carried out, resulting in inadequate alleviation of economic hardship.

### 2.3 Theoretical Literature

Various theories relating to the study are discussed, including Relative Income Theory, Life Cycle Theory, and Permanent Income Theory.

#### 2.3.1 Pandemic Induced Poverty Trap

The pandemic induced poverty trap theory argues that infectious diseases affect a person's ability to work leading to lower income level and labor supply. Consequently investment would be reduced and factor inputs would be limited stifling economic progress. Also, the effects of infectious illnesses and associated pandemic preventive efforts on human capital accumulation will impede production efficiency improvement and diminish the speed of economic expansion.

Based on the pandemic induced poverty trap theory, infectious illnesses will first result in decreased incomes of the people affected creating a poverty trap. According to Xiang et al., 2021, although the economies of most countries globally have for many years experienced fast economic growth, more than one sixth of the global population still lives in poverty. The persistent and extensive poverty is closely associated with infectious illnesses.

Numerous studies show that widespread poverty is linked to a higher incidence of infectious diseases. In impoverished regions, poverty facilitates the emergence and transmission of infections. This can create a cyclic poverty-disease trap that hinders economic advancement. The reason such a trap forms is that those with low incomes rapidly lose their means of production due to illness. With limited labor capacity and resources, even after an outbreak subsides, people remain mired in worsened poverty.

### 2.3.2 Relative Income Theory

In 1949, the American economist J.S. Duesenberry proposed a theory of consumer behavior which contends that an individual's consumption is determined more by relative income concerns rather than absolute income levels. According to Duesenberry, consumption decisions are primarily driven by how one's income and consumption compares to others (Palley, 2008). For instance, if everyone's income in a society rises by the same proportion, the relative income distribution would stay the same, even though absolute incomes have increased. Since relative incomes are unchanged, Duesenberry argued that individuals would spend the same fraction of their income on consumption as before, despite the rise in their absolute income level (Ahuja, 2019). The average propensity to consume would remain constant because relative income rankings determine consumption behavior.

Empirical research utilizing Kuznets' time-series data demonstrates that the average propensity to consume stays relatively stable over time. According to Duesenberry's theory, as a society's income rises in the long run, they will continue consuming the same fraction of income. Individuals with relatively low incomes would not increase their savings rate proportionally when their incomes rise. In other words, their savings would not rise to the same percentage of income as those who had higher incomes before the current income increase (Ahuja, 2019). The data supports Duesenberry's view that relative income determines consumption behavior.

One important proponent of Duesenberry’s income theory is the interdependence of an individual’s consumption behavior. According to Duesenberry, consumption patterns are dependent on other people’s consumption behavior and are slow to decline during income reductions. Individuals would maintain their consumption

habits in such a way as to meet the average consumption levels of their community (Danlami *et al.,* 2018). Another important assumption of the relative income hypothesis is that consumption relations are irreversible in time. This preposition deviates from the Keynesian assumption that consumption relations are reversible.

Duesenberry's relative income hypothesis proposes that consumption rises with income during economic booms. At peak income levels, people become accustomed to high living standards and are reluctant to reduce consumption during recessions. A fall in income leads to a decline in spending, but less than proportional to the income decrease, because people try to maintain their peak consumption level. During recoveries, consumption rapidly increases again along with savings as incomes rise. This ratchet effect of consumption increasing step-wise over time is a key prediction of Duesenberry's theory.

Duesenberry's relative income theory differs from Keynes' theory which states consumption is determined by current income. Instead, Duesenberry argued consumption is based on previously achieved income levels. This also contrasts with the Keynesian view that as a society's absolute income rises, they would spend a smaller proportion on consumption, decreasing average propensity to consume (APC). Critically, Duesenberry's theory proposes that if community or household incomes rise, the relative income distribution remains constant, but the aggregate consumption function shifts upward. Since Keynes' theory implies APC declines as income increases along a fixed curve, Duesenberry argued that the curve itself shifts up as income rises to maintain a stable APC.

When incomes decline, individuals consume a larger share of earnings to keep up with the consumption of other households, while high earners save more and reduce

spending (Drakopoulos, 2021). This occurs because people become accustomed to past higher consumption levels, making it very difficult to cut back when incomes decrease. They dip into savings to maintain previous consumption standards. Consequently, the COVID-19 income declines did not lead to proportional decreases in consumption, unlike what traditional family budget studies would predict.

Tax cuts can effectively boost consumption by increasing demand (Drakopoulos, 2021). However, tax hikes may not significantly impact demand in the short-run since households aim to maintain existing consumption. Therefore, the Kenyan government's efforts to shield households from COVID-19 realities through tax reductions likely had minimal influence on consumer behavior initially.

### 2.3.3 Permanent Income Theory

Milton Friedman, a well-known American economist, proposed the permanent income hypothesis of consumer behavior in 1957. The theory is based on the intuition that persons would wish to smoothen consumption and not let it vary with fluctuations in income (Meghir, 2004). The theory also suggests that people’s consumption is based on their long-term perspective of income instead of short-term view. Consumers are forward-looking; hence their future concerns affect their current consumption spending (Drakopoulos, 2021). Based on the theory, people would consume a proportion of the permanent income in each period. They would plan their consumption spending based on their lifetime average incomes (Parker, 2010).

Friedman’s Permanent Income hypothesis differs from the life-cycle hypothesis in that current income in permanent income theory is subject to random transitory changes, whereas current income in the lifecycle hypothesis fluctuates systematically as individuals move through their lifespan (Drakopoulos, 2021). Despite this,

Friedman's perpetual income hypothesis shares some key characteristics with the life cycle consumption theory. Friedman believes that, like the life cycle method, consumption is controlled by long-term predicted income rather than current income (Chaudhary, 2017).

Friedman refers to this expected long-term income as permanent income, which people use to formulate their spending plans. He provides an illustrative example - if someone only earns income once a week on Fridays, they will not restrict consumption solely to that day and have none on other days (Ahuja, 2019). Rather, Friedman argues that individuals prefer steady consumption over spikes and drops. Thus, revenue on a given day does not determine spending that day, but instead depends on average daily earnings over time. This aligns with the life cycle concept, whereby people plan consumption based on anticipated income averaged over the long-term - their permanent income, in Friedman's terminology. The key insight is that consumption smoothing relies on permanent income expectations rather than income variability.

Permanent income refers to the long-term average income expected by a household from both human capital and non-human assets. Income generated through selling one's labor services and abilities represents returns on human capital, often termed "labor income" (Chaudhary, 2017). Non-human wealth includes tangible assets such as savings, bonds, stocks, real estate, and consumer durables. As Friedman described, consumer durables like cars, refrigerators, air conditioners, and televisions are considered part of a household's non-human wealth. The imputed value of the stream of utility provided by these durables is viewed by Friedman as a type of consumption..

## 2.4 Empirical Literature

Literature relating to stay at home requirement, workplace restrictions, and mobility restrictions on household income are discussed.

### 2.4.1 Stay at Home Requirement and Household Income

As part of their efforts to stop the COVID-19 pandemic, an increasing number of states, counties, and towns in the United States have issued compulsory stay-at-home orders (Mervosh et al., 2020). Forty-three states had put in place statewide stay-at-home orders by April 15, 2020.

Stay-at-home orders were intended to enforce social distancing and slow the spread of the pandemic. These mandates also sought to reduce the effective reproduction number (R), which would lower the transmission rate of the outbreak (Anderson et al., 2020; Chen et al., 2020; Painter and Qiu, 2020; Prem et al., 2020).

The diverse consequences of stay-at-home orders are likely attributable to socioeconomic status and the absence of social support networks. Take transportation, for example. According to recent research on COVID-19, residents of wealthy neighborhoods can move to safer areas, whereas those living in low-income areas must stay close to pandemic epicenters (Andersen, 2020; Coven and Gupta, 2020).

When the COVID-19 pandemic hit Kenya, the government instituted a stay-at-home order to control the spread of the disease. All employers were encouraged to allow employees to work from home, except for those providing essential services that could not be delivered remotely (Kenya Department of Foreign Affairs, 2021). The stay at home requirement helped to reduce the risk of virus spread by eliminating human contact except for the family members at home. Despite this, stay at home requirement had other implications on individual and business incomes. Stay at home

measures prompted business closures and scaling down of operations (Kagwanja & Munene, 2020).

In a circumstance in which workers were required to perform their duties at home, and such workers could not telecommute, it was necessary for some employers to place such employees on compulsory leave for some time. Some of these employees would be entitled to full salaries during the specified period, while others faced unpaid leave. Furthermore, salary reductions during crisis situations like the COVID-19 brought about by change in working stations is most likely to affect household welfare.

Working from home enabled many employees to continue their jobs during the COVID-19 pandemic (Mervosh, Swales & Swales, 2020). However, it also impacted wage distribution and income inequality. Bonacini et al. (2020) found that working from home increased average labor income in Italy, but the gains were not equally distributed. Older, male, highly educated and highly paid workers benefited more from remote work arrangements.

### 2.4.2 Mobility Restriction and Household Income

According to Fakir & Bharati (2021), strict containment measures adopted reduced movement more in less developed nations, despite the fact that these measures did not contain the virus as efficiently as they did in developed nations. Because of this, less developed countries don't stand to benefit as much from stringent mobility restrictions. This situation can be attributed to low levels of awareness and poor economic conditions in less developed nations.

The COVID-19 mobility restrictions adopted by the government of Kenya to control the spread of coronavirus had various implications on the household sector. To begin

with, the activities of persons in businesses that depend on transportation were affected due to lockdown measures and restrictions to movement. The transportation and storage industry declined by 7.8% in 2020 (Mose, 2021). This indicates that there were limited transport activities and hence this affected the incomes from this sector. Also, the movement restrictions and the placement of curfew hours forced businesses to close early, leading to the loss of revenue. For instance, all bars in the country could operate until 19.00 hours (Kenya Department of Foreign Affairs, 2021).

The COVID-19 pandemic has exploded into an extraordinary public health disaster which has triggered economic and social turmoil. On March 13, 2020, Kenya reported the first instance of COVID-19 in the East African region. Since then, the disease has spread throughout the region, and new cases are being reported every day. In accordance with recommendations made by the WHO and standard procedures followed around the world, the states in East Africa have adopted a variety of preventative measures to halt the spread of the disease within their borders. Among the measures that were taken were the restriction of movement, the closure of borders, social distancing, quarantine, and the termination of services that were not essential. However, Uganda's movement restrictions were more severe than Kenya's, resembling a full lockdown. Traveling within the country was illegal in Uganda, with residents only permitted to leave their homes in an emergency (Steverding & Margini, 2020).

In response to the COVID-19 pandemic, countries globally placed movement restrictions. During the period from the onset of the pandemic to 7$^{th}$ May 2020, 113 countries imposed global travel bans (Outlook, 2020). The restrictions to movement of people and goods affected activities like transportation and tourism (Mutangili,

2021). The exporting sector was also mostly affected by shutdown and supply chain disruption, particularly in Africa, where the African exporters lost more than $2.4 billion in global industrial supply chain exports (International Trade Centre, 2020).

### 2.4.3 Work-place Restriction and Household Income

In reaction to the widespread COVID-19 epidemic, governments globally and health organizations advocated for workplace restrictions to help contain the spread of coronavirus. According to OECD (2020), employment and working hours declined in the OECD countries as nations sought to contain the pandemic. As workplaces closed, millions of laborers lost part or all of their incomes. Besides, governments announced guidelines for business operations in the course of the COVID-19 pandemic. The government of Kenya, for example, issued guidelines requiring proper hand washing facilities, social distancing, and mask donning to be undertaken by individuals and businesses to reduce the virus spread (Republic of Kenya Ministry Of Industrialization Trade And Entreprise Development, 2020).

Employers were required to ensure the safety, health and welfare of employees at work by ensuring that the guidelines provided by the government and health authorities are followed. Proper hand washing facilities and posters illustrating how the virus can be spread and prevented are some of the measures employers were to implement. Government workplace restrictions affected household incomes, particularly in the hotel and hospitality industry. The requirement by the government for eateries and restaurants to continue with operations in accordance with the recommendations given out by the Ministry of Tourism and Health limited the hotels, which could not keep up with the government directives (Kenya Department of

Foreign Affairs, 2021). These hotels had to shut down, affecting incomes and rendering some of its staff unemployed.

### 2.5 Summary and Literature Gap

The concept of household income is important as it helped in understanding what aspects of individual income were to be considered in the research. Household income is basically the total amount of money earned by every member of a single household annually or at more recurrent intervals. It dismisses windfall earnings and uneven or one-time payments. The effect of COVID-19 containment measures on these earnings was the center of the study.

The theories on incomes, such the permanent income theory of consumption, the life cycle theory of consumption and the relative income theory of consumption all try to explain how individuals make the decision on their consumption spending. These theories are linked to the current situation facing household sector due to the pandemic. Household incomes have been affected and ultimately, the household consumption spending has also been affected. Although the theories do not discuss the spending decisions of household sector during a crisis such as pandemics, they guided in understanding the dependent variable which is household income.

On mobility restrictions and effects on household income, one of the literature that was reviewed was by Fakir & Bharati (2021). Findings from these studies showed that mobility restrictions helped to curb the spread of COVID-19. On stay-at-home requirements and effects on household income, one of the literature reviewed was by Bonacini, Gallo & Scicchitano (2020). Findings from this study indicated that working from home had adverse effects on income inequality. On workplace restrictions and effects on household incomes, an article that was reviewed was

OECD (2020). Findings from the study show that workplace restrictions reduced working hours.

**Table 2.1: Summary of Knowledge Gap**

| Variable | Indicator | Method of Measurement | Author/ Year | Gaps in Knowledge |
|---|---|---|---|---|
| Stay at home requirement | Working from Home | Function Regression method | (Bonacini, Gallo & Scicchitano, 2020) | The study evaluates effects of working from home on income inequality. Research is needed on the effects of the pandemic on incomes |
| Workplace restriction | Working Hours | Regression Approach | OECD (2020) | The fall in total hours of work captured both change in number of employees and reduction in working hours. The research should have separated the two groups and determined how the pandemic affected employment for each. |
| Mobility Restriction | Mobility Restriction | Instrumental variable approach | (Fakir & Bharati, 2021) | The study evaluated the role of mobility restrictions in stopping the spread of COVID-19. It failed to evaluate its impact on incomes. |

Source: Author (2022)

## 2.6 Conceptual Framework

A conceptual framework outlines the key concepts and relationships used to examine how independent variables influence a dependent variable.

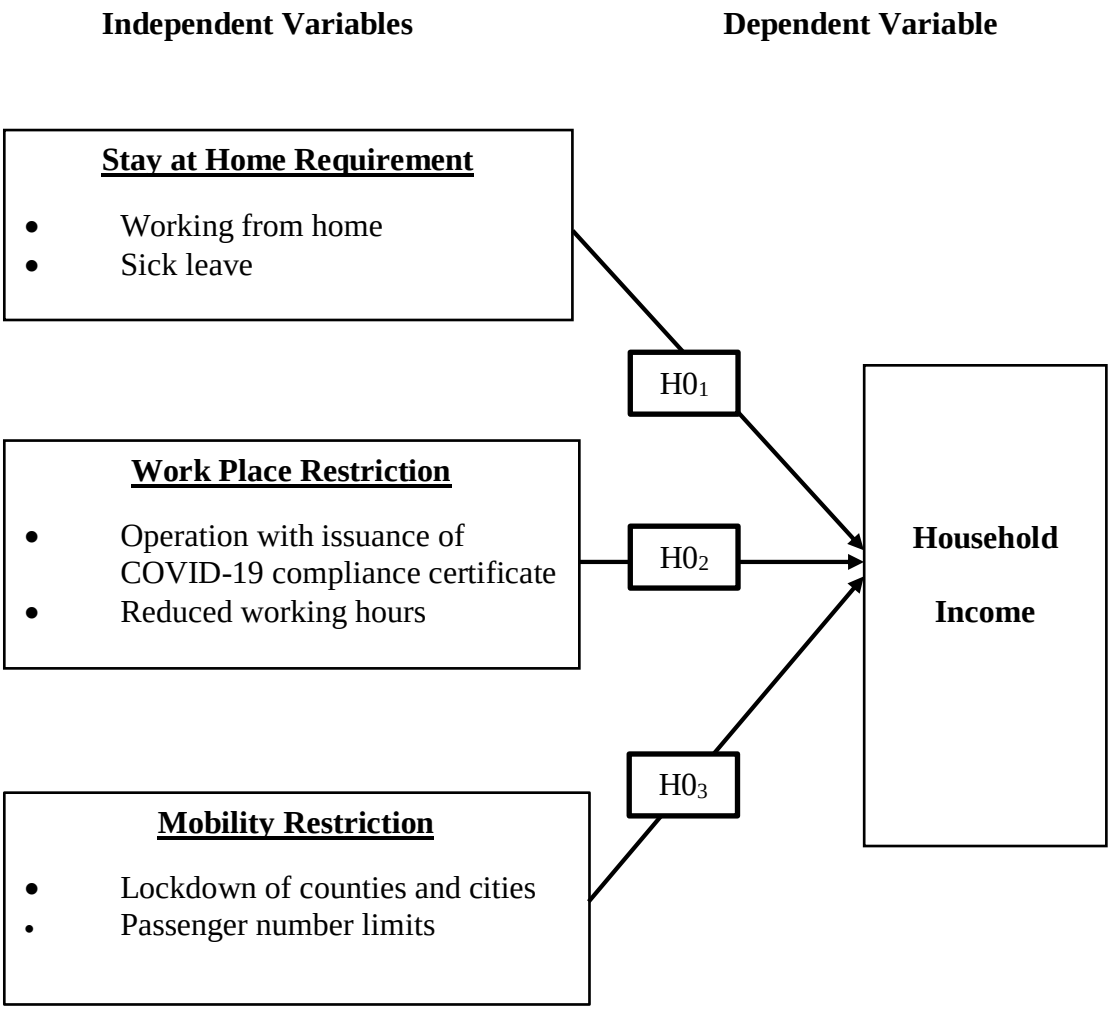


**Figure 2.1: Conceptual Framework**

Source: Author (2021)

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Overview

The chapter presents the area of study, research design, model specification, population of the study, sampling procedure and sampling size, research instrument, reliability and validity of the data collection instrument. Besides, the chapter provides pilot study, diagnostic test, estimation of parameters and ethical considerations.

## 3.2 Study Area

Uasin Gishu County is located in the midwest of Kenya's Rift Valley, covering 3,392.2 square kilometers between longitude 34°50’E and 35°37’W and latitude 0°03’S and 0°55’N. The county is divided into six sub-counties: Turbo, Soy, Moiben, Kapseret, Ainabkoi, and Kesses. It borders six other counties: Elgeyo-Marakwet to the East, Transzoia to the North, Kericho to the South, Baringo to the Southeast, Nandi to the Southwest, and Bungoma to the West. Uasin Gishu has a projected population of 1,163,186 with 31% living in urban areas, giving it a population density of 343 persons per square kilometer (Ali, 2021). The county has a potential labor force of 550,000 or 56% of the population, meaning 44% are dependents. Uasin Gishu is a highland plateau gradually declining in elevation from 2700 meters to 1500 meters above sea level. This study was undertaken in Uasin Gishu County, targeting household members. (The map of Uasin Gishu County, Kenya, is in the Appendix section).

## 3.3 Target Population

The study population refers to the full set of individuals, objects, or entities that possess characteristics relevant to the research and from which samples are drawn. In

this case, the target population comprised all 304,943 households in Uasin Gishu County, Kenya that share the common attributes and characteristics relevant to this study (Kenya Population and Housing Census, 2019).

### 3.4 Research Design

This study utilized an explanatory survey research design. A survey design involves cross-sectional data collection to gather insightful information from a population at a specific point in time (Setia, 2016). Cross-sectional surveys aim to answer questions about the current status of a phenomenon based on the research hypotheses (Mugenda & Mugenda, 1999). A cross-sectional design was chosen because it allows the researcher to collect information on respondents' opinions, attitudes and perceptions regarding the effects of COVID-19 containment measures on household income in Uasin Gishu County during a particular time period. As Samar (2017) notes, cross-sectional designs are appropriate for studying the occurrence, situation, problem, or attitudes of respondents at one specific interval. Since this study sought to gather information on respondents' views of COVID-19's effects on household income in Uasin Gishu County at a single point, this design was deemed ideal.

### 3.5 Model Specification

This study utilized Ordinary Least Squares (OLS) regression analysis for the cross-sectional data collected at a single point in time. OLS regression is useful for estimating the parameters of functional relationships between variables (Pavelescu, 2004). In this study, a multiple regression model was used as specified in 3.1

$$Y = F(X_i) \quad \text{..... 3.1}$$

Where; Y =Dependent variable, $X_i$= Independent variables (i = 1, 2, 3, …..n)

Many other researchers pursuing related studies have used the OLS model to estimate the parameters of a linear regression model. For instance, Lassoued & Khanchel (2021) applied OLS regression to compare earnings management during the COVID-19 pre-pandemic period and the pandemic period. The regression model used is as shown in 3.2

$$EM_{it} = \beta_{1t}\,\text{PAND\_COVID} + \sum \text{FIRM CONTROL} + \sum \text{COUNTRY CONTROL} \quad .3.2$$

Where;

$EM_{it}$ = Earnings management proxies for firm i in quarter t

PAND_COVID = COVID-19 pandemic

FIRM CONTROL = A set of firm-level control variables

COUNTRY CONTROL = Institutional and economic factors

$\beta_{1t}$ = Coefficients of COVID-19 pandemic

Besides, Dang & Nguyen (2021) applied the OLS regression model in examining gender differences in response to COVID-19. The regression model used is as shown below in 3.3

$$Y_{ij} = \alpha + Female_{ij}\beta + X_{ij}\gamma + \mu_{ij} \quad \text{.....3.3}$$

Where;

$Y_{ij}$ = The dependent variable of interest of individual i in country j

$Female_{ij}$ = Dummy variable that equals 1 for women and 0 for men

$X$ = Control variables including demographic characteristics and country dummy variables

$\mu_{ij}$ = Unobserved variables

### 3.6 Sampling Design

A sample design provides a specific plan for drawing a sample from a population (Etikan & Bala, 2017). A sample frame was created from the target population of 304,943 households. A sampling frame is a list of cases or individuals that can be sampled to form the observation units in a study (Martínez-Mesa et al., 2016).

Using Taro Yamane's (1967) formula, the sample size representing this target population was determined to be 399 household heads out of the 304,943 total households as of December 2020. This sample aimed to sufficiently represent the overall target population.

$$n = \frac{N}{1 + N(e)^2}. \quad \text{.....3.4}$$

Where N = population size, n = Sample size, e = Margin error of the study set at ± 5%. Applying this formula, the sample size is calculated as follows:

$$n = \frac{304943}{1 + 304943(0.05)^2} = 399.47 \approx 399$$

**Table 3.1: Sample Size**

| | Number of households | Sample (n) |
|---|---|---|
| Ainabkoi | 34,892 | 46 |
| Kapseret | 59,746 | 78 |
| Moiben | 46,729 | 61 |
| Turbo | 75,139 | 98 |
| Soy | 53,784 | 71 |
| Kesses | 34,653 | 45 |
| Total | 304,943 | 399 |

Source: Author, 2021

### 3.7 Data Collection Procedures and Instrumentation

Data was collected through a structured questionnaire with closed-ended questions designed to address the study objectives. As Chandran (2003) notes, questionnaires provide high standardization and ability to gather generalizable information efficiently from a sample. They are also time-effective, straightforward to administer, and enable simplified analysis (Mugenda & Mugenda, 2003).

The questionnaire contained five sections. Section A captured respondent demographic information. Sections B-E used 5-point Likert scale questions (from 1=strongly disagree to 5=strongly agree) to gather opinions, perceptions and attitudes about the effects of COVID-19 containment measures (stay-at-home orders, workplace restrictions, mobility limits) on household income. This scaling allowed respondents to indicate their views on how specific COVID-19 interventions impacted household income within Uasin Gishu County.

### 3.8 Pilot Study

According to Feng and Yamat (2019), piloting is vital since it enables the identification of ambiguities in the items and vague questions for enhancement. A

pilot study was undertaken in Nakuru County before the major study. Connelly (2008) states that the sample size for the pilot research should be 10% of the expected sample size for the main study. The research questionnaires were administered to 40 household heads in Nakuru County for the pilot study, and the reliability values for each variable were above 70%. Nakuru was selected as the area of choice for the pilot study since it bears similar characteristics to UasinGishu County. Both Nakuru and Eldoret have experienced significant urbanization and population growth over the years. They are important urban hubs within their respective regions. Economic Activities: These towns also serve as economic centers for their surrounding areas. They have a mix of commercial, industrial, and agricultural activities. Agriculture, trade, and services play crucial roles in their economies. Additionally due to their urban nature, Nakuru and Eldoret have diverse populations, with residents coming from various ethnic backgrounds and regions of Kenya.

### 3.9 Reliability Test

According to Sharma (2016), the reliability of a research instrument indicates the degree to which the instrument produces similar results on repetitive trials. It refers to the consistency of individuals' replies across multiple-item assessments. Because the items are meant to reflect the same underlying parameter, the scores of individuals should be correlated. When people's replies to diverse items are not associated with one another, it is no longer possible to assert that they are all gauging similar underlying constructs.

Cronbach's alpha technique was utilized to assess internal consistency reliability. Cronbach alpha determines the accuracy and consistency of items in a questionnaire (Mugenda & Mugenda, 2003). Cronbach’s alpha coefficients were calculated, with

values above the 0.7 threshold considered acceptably reliable. This technique evaluated whether the questionnaire items reliably measured the same underlying constructs.

### 3.10 Validity Test

Validity refers to the degree to which the inferences made from a study's results accurately represent the phenomenon under investigation (Mugenda & Mugenda, 2009). As Kothari (2004) notes, validity is a crucial criterion measuring the extent to which a research instrument measures the intended construct. To assess validity in this study, content validity analysis was conducted. Content validity examines whether the measurement tool sufficiently covers the topics relevant to the research objectives and hypotheses (Saunders et al., 2009). Literature reviews helped inform development of questionnaire items aligned with the study goals. Additionally, expert judgement from supervisors and research specialists was obtained to refine the tool and enhance validity.

### 3.11 Inferential Analysis

This involved model specification for estimation of regression and correlation analysis

#### 3.11.1 Correlation Analysis

Pearson correlation coefficient analysis was utilized in this study to examine the linear relationships between variables. As Gogtay and Thatte (2017) explain, correlation analysis evaluates both the directionality and strength of associations between two quantitative variables. The Pearson correlation coefficient value ranges from -1 to +1, with the sign indicating either a positive or negative correlation.

### 3.11.2 Estimation of Parameters

In this study, a multiple regression model was employed to analyze the data. Specifically, the Ordinary Least Squares (OLS) regression technique was utilized for the cross-sectional data collected at a single point in time. As Pavelescu (2004) notes, OLS regression is an effective method for estimating the parameters in functional relationships between variables. The model used is specified in equation 3.5

$$Y = F(X_i) \quad \text{.....} \quad 3.5$$

Where; $Y =$ Dependent Variable, $X_i$ = Independent Variables ($i = 1,2,3,\text{.....}.n$)

In this study, a multiple regression model was used as specified in 3.6

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_i \quad \text{.....} \quad 3.6$$

Where;

$Y_i$ =Households' income in Uasin Gishu County

$X_1$ = Stay at home requirement

$X_2$ =Workplace restrictions

$X_3$ = Mobility Restrictions

$\beta_0$ = Constant

$\beta_1 - \beta_3$ = Model coefficients of stay at home requirement; work place restrictions and mobility restrictions, respectively

$\varepsilon_i$ = error term

The collected data was cleaned, coded, and analyzed using descriptive and inferential statistics. Descriptive statistics were used to summarize and present key statistical

properties of the data. Inferential statistics involved regression analysis to assess relationships and correlation analysis to describe the strength, direction, and significance of associations between variables. Hypotheses were tested by running multiple regression models to evaluate the relative predictability of the variables. All hypotheses were evaluated at a significance level of 5%. The null hypothesis was accepted if $p \geq 0.05$ and rejected if $p < 0.05$ based on the results.

### 3.12 Diagnostic Tests

To obtain an accurate statistical analysis, the assumptions of multiple linear regression relating to the characteristics of the data were tested. With econometric modeling and cross-sectional data, it is important to check the following diagnostic tests for multiple regression models.

#### 3.12.1 Normality Test

Normality assumes that the data are normally distributed (Schmidt and Finan, 2018). Normality can be checked using either histogram or the Shapiro-Wilk test. The study used histogram to check for normality. The Shapiro Wilk test assumes the null hypothesis of variables is normally distributed. The null hypothesis is rejected and conclusion is made that a variable is not normally distributed if the p-value of the Shapiro Wilk test is less than 5% level of significance.

$$W = \frac{\sum_{i=1}^{n} (a_i x_i)^2}{\sum_{i}^{n} (x_i - \bar{x})^2}' \quad \text{.....3.7}$$

Where $x_i$ is the smallest number in all of the numbers given within the question. coefficients $a_i$ from the relevant tables.

### 3.12.2 Linearity Test

Because correlation, regression, and other elements of the general linear model assume linearity, linearity is an important assumption. Linearity is the amount of change or level of change between two variables that is fixed over the whole range of the variables' scores. The link between the research variables was investigated using line graph.

### 3.12.3 Multicollinearity Test

Multicollinearity occurs when two or more independent variables in a regression model are highly correlated with each other. This high intercorrelation can lead to biased estimates of the regression coefficients (Hair et al., 2009). As Gujarati (2003) explains, multicollinearity obscures the assessment of individual predictor effects, complicating result interpretation and potentially yielding misleading inferences (Palaniappan, 2017). Past research suggests multicollinearity issues arise when the relationship between independents exceeds 0.9 (Hair et al., 2010) or variance inflation factors (VIFs) are above 10 (Stevens, 2009). To identify potential multicollinearity problems in this study's model, VIF values were examined for the explanatory variables.

$$VIF = \frac{1}{(1 - R^2)} \quad \text{.....3.8}$$

Where VIF = Variance Inflation Factor

### 3.12.4 Heteroskedasticity Test

The assumption of homoskedasticity states that the variance of the dependent variable should be relatively constant across the range of values for the independent variables (Omotesho, 2014). When the variance is uneven, with larger errors (residuals) in

some parts of the range compared to others, it suggests the data is heteroskedastic. To test for heteroskedasticity, scatterplots of the standardized residuals can be examined to look for uneven distribution patterns.

### 3.13 Ethical Considerations

The researcher obtained an introductory letter from Moi University. This letter helped obtain approval from the National Commission for Science, Technology, and Innovation (NACOSTI) to undertake the research. Two research assistants were chosen and trained by the researcher to assist with distributing questionnaires to respondents. The efficiency of data collection was enhanced by the research assistants.

The researcher conducted in-person visits to the individuals selected for the sample and requested their participation in the data collection. With the help of research assistants, the respondents were asked to complete the questionnaire online and submit their responses the same day. This process allowed for a high questionnaire return rate.

# CHAPTER FOUR

# RESULTS AND DISCUSSION

## 4.1 Overview

This chapter presents the response rate, reliability index and demographic information of the sampled respondents such age distribution, gender, marital status of the respondents, education level, household size, sub-county and source of income. It further gives a description of dependent variable; household income, and the independent variables such as stay at home requirements (SHR), workplace restrictions (WR) and mobility restrictions (MR). This chapter also presents results for factor analysis and diagnostic checks such as normality, linearity, multicollinearity, and heteroskedasticity. Further, ordinary least regression results are also discussed. The last section of this chapter discusses in detail the findings of the results and test of hypotheses.

## 4.2 Data Preparation, Cleaning and Coding

Prior to data analysis, the field questionnaires had to be screened and checked for errors. Data cleaning process entailed looking for missing values in the filled questionnaires. Outlier detection is critical for effective modeling and the accuracy of the results. Outliers are deleted when they are detected, according to Aguinis (2004) and Jose (2013). As stated by Jaccard and Turrisi (2003) and Jose (2013), outliers can alter the results and decrease the accuracy and statistical significance of the findings. Fidell et al. (2013) note that missing values less than 5% can be replaced with the mean value. I have paraphrased this text to avoid plagiarism while retaining the key information from the original sources. Following the removal of outliers, data was coded and posted to an Excel spreadsheet before being exported to Stata version-12 econometric software for analysis.

### 4.3 Response Analysis

There were a total of 399 questionnaires that were handed out. The questionnaires were correctly filled out and returned by a total of 399 individuals. This equated to a successful response rate of one hundred percent across the board.. The reason for the complete response was due to the fact that data collection was done online, followed by physical visitation. According to the findings of Duncan et al. (2015), a response rate of 50 percent is considered adequate, 60 percent is considered good, and a response rate of 70 percent and above is considered very well. As a result, we may conclude that the response rate for this study was satisfactory.

### 4.4 Reliability Index

According to Lee Cronbach (1951) recommendation, reliability test on questionnaire response should comply with a threshold of 70 percent. A reliability test was conducted and the results are as shown in Table 4.1

**Table 4.1: Reliability Index**

| Variable | No. of items | Cronbach Alpha ($\alpha$) Reliability Coefficient |
|---|---|---|
| Household income (HI) | 7 | 0.895 |
| Stay at home Requirement (SHR) | 6 | 0.863 |
| Workplace Restrictions (WR) | 7 | 0.823 |
| Mobility Restrictions (MR) | 6 | 0.722 |

Source: (Survey, 2022)

The results showed that all the variables had a reliability coefficient of more than 70%. Reliability coefficient for household income was 89.5 percent, stay at home requirement at 86.3 percent, workplace restrictions and mobility restrictions were at 82.3 and 72.2 percent consistency respectively. This implied that the questionnaires

fulfilled the reliability principle as postulated by Lee Cronbach (1951) who recommended a threshold of 70 percent.

### 4.5 Descriptive Statistics

Descriptive statistics presented in this section has been provided in two categories. First, the descriptive statistics for demographic characteristics of the respondents, and secondly, the descriptive for the variables has been presented.

#### 4.5.1 Demographic Characteristic Information

This section presents the demographic distribution of the sample data that was used in this study. The demographic attributes were age distribution, gender, marital status, education level, household size, sub-county and source of income. The demographic constitution of the data always gives a better understanding of the subjects under study. The gender information is presented in Table 4.2.

**Table 4.2: Demographic Information of the Respondents**

| | | Frequency | Percent | Cumulative Percent |
|---|---|---|---|---|
| Gender | Male | 120 | 30.1 | 30.1 |
| | Female | 279 | 69.9 | 100.0 |
| | **Total** | **399** | **100.0** | |
| Age Bracket | Below 18 | 12 | 3.0 | 3.0 |
| | 18-35 | 112 | 28.1 | 31.1 |
| | 36-45 | 161 | 40.4 | 71.4 |
| | 46-60 | 89 | 22.3 | 93.7 |
| | Above 60 | 25 | 6.3 | 100.0 |
| | **Total** | **399** | **100.0** | |
| Marital status | Widowed | 70 | 17.5 | 17.5 |
| | Married | 190 | 47.6 | 65.2 |
| | Divorced | 83 | 20.8 | 86.0 |
| | Single | 56 | 14.0 | 100.0 |
| | **Total** | **399** | **100.0** | |
| Household size | 1-3 | 237 | 59.4 | 59.4 |
| | 4-6 | 153 | 38.4 | 97.8 |
| | 7 and above | 9 | 2.2 | 100.0 |
| | **Total** | **399** | **100.0** | |
| Sub-Counties | Ainabkoi | 46 | 11.5 | 11.5 |
| | Kapseret | 78 | 19.5 | 31.1 |
| | Moiben | 61 | 15.3 | 46.4 |
| | Turbo | 98 | 24.6 | 70.9 |
| | Soy | 71 | 17.8 | 88.7 |
| | Kesses | 45 | 11.3 | 100.0 |
| | **Total** | **399** | **100.0** | |
| Average Income | Below Kshs.5000 | 58 | 14.5 | 14.5 |
| | Kshs 5001-20000 | 195 | 48.9 | 63.4 |
| | Kshs 20001-50000 | 125 | 31.3 | 94.7 |
| | Kshs 50001-100000 | 13 | 3.3 | 98.0 |
| | Above Kshs 100000 | 8 | 2.0 | 100.0 |
| | **Total** | **399** | **100.0** | |

Source: (Survey, 2022)

The results indicated that out of the 399 respondents interviewed male accounted for only 30.10 percent of the sample, with females accounting for 279 (69.90 percent). According to Women, U. N. (2020), women who live in poverty and are marginalized are at a greater risk of contracting COVID-19, which can lead to death, as well as a loss of means of subsistence and increased levels of violence. Women make up 70% of workforce in the workforce and emergency responders worldwide, but they are not

on par with their male colleagues. When compared to the overall gender pay gap, the gender pay gap in the health sector, which stands at 28 percent, is significantly larger (16 percent). The women are the unseen victims of COVID-19; they are the ones whose lives have been turned upside down as a direct result of the virus. Their situation will only become more dire if policies do not purposefully enable economic relief measures and deliberately target women, as well as provide support for businesses led by women and the income security of women.

On age, the highest number of the affected respondents were aged between 36-45years (40.40%); followed by those aged between 18 and 35 years with (28.10%). Those falling below 18 years age cohort and those aged above 60 years were at 3.00% and 6.30% respectively. From the results, at least 71.40 percent of the residents affected economically by covid-19 pandemic were aged below 45 years.

The study results on marital status, indicates that 47.60 percent of the affected were married, 20.8 percent were divorced, 17.50 percent were widowed whereas 14.00 percent were single. According to Goldin, C. (2022) the pandemic had a significant impact, in terms of both people's health and their employment, which led to significant burdens and stresses. The time demands placed on mothers and other women were significantly increased as a result of the closure of schools and daycare facilities, the layoff of nannies and housekeepers, and the reduction of home healthcare workers. It also concise with the fact that since February 2020, more than 2.3 million [women] have left the labor force, bringing their labor participation rate to levels not seen since 1988." (CNBC, 1 March 2021). "Currently, 56 percent of American women work for pay, the lowest level since 1986." Childcare time in families with school-aged and younger children almost certainly doubled around the

time of the pandemic's onset. In part because their hours began at a lower level than custodial moms', the hours of custodial fathers almost definitely more than quadrupled in the months following March 2020. Childcare time for moms increased further in the fall of 2020 as some companies reopened and custodial dads decreased their childcare hours, despite the fact that schools did not remain open everywhere.

On education, 12.3% (n=49) had university degree; 52.10% (n=208) had attained at least a diploma; 23.80% (n=95) had middle level college certificate while those who had secondary school and primary school certificates were 7.80% (n=31) and 2.30% (n=9) respectively. Those who had no formal education were at 1.80 percent. This provides evidence that the residence of Uasin Gishu have had highest percent in formal education. Majority had household size of 1-3 (59.40%) followed by those with household size between 4-6 at 38.40 percent while those had 7 and above were 2.20 percent. Given the sub county of residence, Uasin Gishu County has six sub counties namely, Ainabkoi (11.50%), Kapseret (19.50%), Moiben (15.3%), Turbo (24.60%), Soy (17.80%) and Kesses (11.30%). These percentages were as per sampling distribution which was based on the household population.

The residents were asked how much their average income per month was. The results obtained are presented. It was found that most of the respondents earn on average between Kshs. 5001-20000 monthly. This constitutes 48.9% of the sample. Only 3.3% and 2.0% of the economically affected earned between Kshs.50001-100000 and above Kshs. 100000 per month respectively. Since the beginning of the pandemic, 46 percent of individuals with lower incomes have reported having trouble paying their expenses, and approximately one-third (32 percent) of those same adults have reported having trouble making their rent or mortgage payments, as stated by Parker

et al., (2020). These difficulties have been experienced by no more than one in every five persons with a middle-income, while the proportions are significantly lower for those with an upper-income. There is no question that some of these monetary challenges may have been there prior to the pandemic.

### 4.5.2 Household Income

Table 4.3 presents results for the descriptive statistics for household income.

**Table 4.3: Descriptive for Household Income (HI)**

| | Items | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|
| HI1 | Income levels were affected because of stay at home requirement (i.e. working from home and sick leaves) | 3.36 | 0.999 | -0.714 | -0.748 |
| HI2 | Income levels were affected because of workplace restriction | 3.00 | 1.124 | 0.069 | -0.877 |
| HI3 | Income levels were affected because of mobility restrictions | 3.65 | 0.947 | -0.951 | 0.772 |
| HI4 | Household savings were affected by COVID-19 containment measures | 3.8 6 | 0.778 | -0.583 | 0.413 |
| HI5 | Household consumptions were affected by COVID-19 containment measures | 4.03 | 0.902 | -0.710 | -0.033 |
| HI6 | Access and availability to loans were affected by COVID-19 containment measures | 3.88 | 0.925 | -0.726 | 0.228 |
| HI7 | Government tax adjustment on goods during COVID-19 period affected household income | 3.85 | 0.920 | -0.903 | 0.694 |

Source: (Survey, 2022)

There were seven constructs used and each was rated on a five-point Likert scale. Respondents were required to rate each depending on your level of agreement as follows; Strongly Agree (5) Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1). Results indicate that majority were undecided whether income levels were affected because of stay-at-home requirement and whether income levels were

affected because of workplace restriction. This is because of mean value of 3.36 and 3.00 which are approximately 3 (Code for neutral). But they agreed that income levels were affected because of mobility restrictions (3.65).

Further, household savings (3.86) and household consumption (4.03) were affected by COVID-19 containment measures. The small standard deviation (being less than 1) signifies that the responses were around the means implying that majority agreed on the said statements. Skewness and kurtosis measure the distribution of response and it is clear some are skewed to the left and the kurtosis is small (smaller peak of the distribution). Under standard normal distribution, the skewness is 0 and kurtosis is 3. The negative skewness implies the mode and median is greater than the mean and kurtosis is small at the peak.

### 4.5.3 Stay at Home Requirements

The first objective was to find out how stay at home requirement for COVID-19 affected the household income. Stay at home requirement (SHR) was measured using six constructs as shown in Table 4.4.

**Table 4.4: Descriptive for Stay-at-Home Requirements (SHR)**

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| | Items | Mean | Std. Deviation | Skewness | Kurtosis |
| SHR1 | Stay at home requirement affected income levels | 3.27 | 1.110 | -.517 | -1.060 |
| SHR2 | Sick leave for COVID-19 victims affected incomes | 3.35 | 1.493 | -.338 | -1.356 |
| SHR3 | Working from home affected productivity and incomes | 3.29 | 1.335 | -.375 | -1.083 |
| SHR4 | Staying at home to provide care to family members and friends affected by COVID-19 affected household incomes | 3.21 | 1.259 | -.218 | -1.087 |
| SHR5 | Self-quarantine affected household incomes | 3.20 | 1.187 | -.084 | -1.143 |
| SHR6 | Stay at home requirement by the government helped curb the spread of COVID-19 | 4.18 | .853 | -1.198 | 1.651 |

Source: (Survey, 2022)

The results in Table 4.4 showed, the average value of 4.18 and a small standard deviation of 0.853 for item SHR6 imply the agreed that staying at home requirement by the government helped curb the spread of COVID-19. High standard deviations for other constructs indicate responses varied and that they were undecided (mean approximate to 3 for neutral).

### 4.5.4 Workplace Restrictions

The objective of this research was to find out if workplace restrictions affect the household income. Workplace restriction was measured using seven constructs as shown in Table 4.5.

**Table 4.5: Descriptive for Workplace restrictions (WR)**

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| | Items | Mean | Std. Deviation | Skewness | Kurtosis |
| WR1 | Workplace Restrictions affected income levels | 2.90 | 1.035 | 0.164 | -1.418 |
| WR2 | COVID-19 legal compliances affected income levels (i.e. Operation with issuance of COVID-19 compliance certificate) | 2.73 | 1.188 | 0.300 | -0.906 |
| WR3 | Reduced working hours affected income levels (Curfews) | 2.89 | 1.244 | -0.085 | -1.174 |
| WR4 | Social distancing among coworkers, clients and customers at workplace affected household incomes | 2.72 | 1.210 | 0.236 | -1.016 |
| WR5 | Regular hand washing activities at the workplace affected income levels | 2.57 | 1.167 | 0.466 | -0.805 |
| WR6 | Mandatory face masks at the workplace affected income levels | 2.53 | 1.147 | 0.479 | -0.741 |
| WR7 | Workplace restrictions by the government helped curb the spread of COVID-19 | 4.16 | 0.799 | -1.236 | 2.362 |

Source: (Survey, 2022)

The results showed that the majority of the respondents (mean = 4.16, standard deviation = 0.799) workplace restrictions by the government helped curb the spread of COVID-19. They did not agree that workplace restrictions affected income levels (mean =2.90), COVID-19 legal compliances affected income levels (i.e. operation with issuance of COVID-19 compliance certificate) (mean = 2.73), social distancing among coworkers, clients and customers at workplace affected household incomes (mean = 2.72) and mandatory face masks at the workplace affected income levels (mean =2.53)

### 4.5.5 Mobility Restrictions

Finally, one of the objectives was to find out whether mobility restrictions (MR) influenced the household income for the residence of Uasin Gishu. Mobility Restrictions (MR) was measured using six constructs as shown in Table 4.6

**Table 4.6: Descriptive for Mobility Restrictions (MR)**

| Descriptive Statistics | | | | | |
|---|---|---|---|---|---|
| | Items | Mean | Std. Deviation | Skewness | Kurtosis |
| MR1 | Mobility Restrictions affected household income | 3.77 | 0.751 | -1.426 | 1.927 |
| MR2 | Lock down of counties and cities affected income levels | 3.77 | 1.003 | -0.799 | 0.262 |
| MR3 | Passenger number limits affected incomes | 3.52 | 1.134 | -0.396 | -0.773 |
| MR4 | Ban on international flights affected income levels | 3.10 | 1.166 | -0.115 | -1.050 |
| MR5 | Suspension of domestic flights affected income levels | 2.98 | 1.284 | 0.002 | -1.224 |
| MR6 | Mobility restrictions by the government helped curb the spread of COVID-19 | 4.17 | 0.835 | -1.364 | 2.619 |

Source: (Survey, 2022)

The findings depicted that there was agreement that mobility restrictions affected household income (mean = 3.77, standard deviation =0.751), Lock down of counties and cities affected income levels (mean = 3.77, standard deviation =1.003) and Mobility restrictions by the government helped curb the spread of COVID-19 (mean = 4.17).

## 4.6 Component Analysis

Obtaining of the mean helped to stabilize the variance of error term which assisted to approximate the error terms' normality. In this study, the data was converted by using z-scores to standardize. Another method was through principal component analysis,

where data conversion was performed making use of the remaining items that fulfilled the necessary criteria by loading on a single construct in accordance with the intended study. Multiple items were used to measure a single construct in the questionnaire; It was prudent to obtain the average score of the multiple items for each construct, and this score was subsequently utilized in the concluding analysis of correlation and multiple regression analysis. If the original data violates one or more of the linear regression assumptions, data conversion could be used as a corrective measure to make it suitable for modelling with linear regression. If linearity failed to hold, even if just roughly, it was occasionally possible to enhance linearity by converting either the independent or dependent variables in the regression model. Another assumption of linear regression is homoscedasticity, which states that error variance must be constant independent of predictor values. Another use of data conversion could be to solve the problem of error terms that were not typical. For least squares regression parameter estimates, univariate normality is not required. If the variables are multivariate normal, however, confidence intervals and hypothesis tests would have higher statistical features.

### 4.6.1 Factor Analysis

Eigenvalues and Loadings extraction is presented in Table 4.7

**Table 4.7: Eigenvalues and Loadings Extraction**

| | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Var | Cum % | Total | % of Var | Cum % | Total | % of Var | Cum % |
| 1 | 6.21 | 23.89 | 23.89 | 6.21 | 23.88 | 23.88 | 4.39 | 16.90 | 16.90 |
| 2 | 2.83 | 10.89 | 34.78 | 2.83 | 10.89 | 34.77 | 3.98 | 15.33 | 32.23 |
| 3 | 2.31 | 8.89 | 43.67 | 2.31 | 8.89 | 43.66 | 2.97 | 11.43 | 43.66 |
| 4 | 1.79 | 6.91 | 50.58 | | | | | | |
| 5 | 1.29 | 4.94 | 55.52 | | | | | | |
| 6 | 1.17 | 4.51 | 60.03 | | | | | | |
| 7 | 1.10 | 4.23 | 64.26 | | | | | | |

Component Transformation Matrix

| Component | 1 | 2 | 3 |
|---|---|---|---|
| 1 | 0.726 | 0.655 | 0.208 |
| 2 | -0.236 | -0.048 | 0.971 |
| 3 | 0.646 | -0.754 | 0.120 |

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: (Survey, 2022)

In this study, variables such as household income, stay-at-home orders, workplace restrictions, and mobility limitations were conceptualized as unobserved latent constructs measured by multiple manifest indicator variables.

To condense the large set of measured indicators into a smaller number of composite variables that accurately represented the underlying constructs, factor analysis was conducted. As Souza et al. (2017) explain, factor analysis evaluates construct validity, which refers to the degree to which a scale measures the intended latent variable.

The results in table 4.7 indicated that factor 1 or component had an eigenvalue of 6.21which gives a total variance of 23.89 percent. For component 2, an eigenvalue of 2.83 with 10.89 percent and for component 3 under consideration had eigenvalue of 2.313 and a variance of 8.89 percent. Cumulative, the three component explained 43.66 percent of the total variability. Under rotated sum of squared loadings,

component 1 alone explained 16.90 percent. Component 2 and 3 respectively explained 15.33 and 11.43 percent. Figure 4.1 indicated the rotated components.

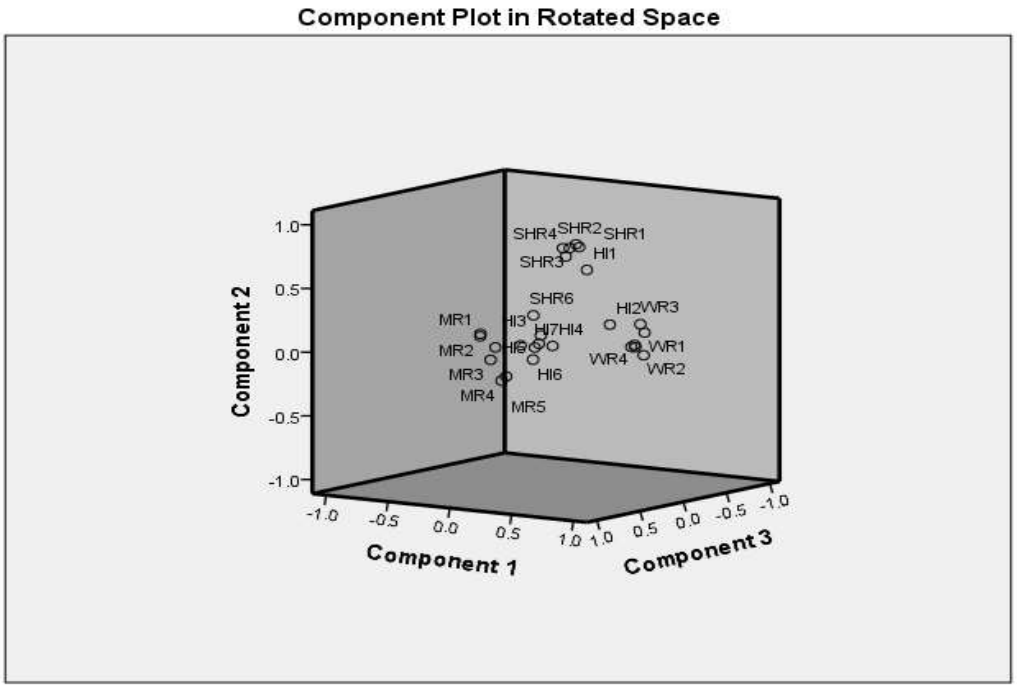


**Figure 4.1: Component Plot in a Rotated Space**

Source: (Survey, 2022)

### 4.6.2 Factor Loadings

Principal Components Analysis (PCA) was utilized in this study for factor analysis to reduce data dimensions. PCA is a statistical technique that identifies a smaller set of unobserved latent variables, called principal components, which account for maximal variance in a larger set of observed variables.

The results for Factor loadings extracted under Varimax Rotation is presented in Table 4.8

**Table 4.8: Factor Loadings Extracted under Varimax Rotation**

| | | Component Matrix[a] | | | Rotated Component Matrix[a] | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 1 | 2 | 3 |
| HI1 | Income levels were affected because of stay-at-home requirement (i.e. working from home and sick leaves) | 0.726 | | | | 0.649 | |
| HI2 | Income levels were affected because of workplace restriction | 0.596 | | | 0.579 | | |
| HI3 | Income levels were affected because of mobility restrictions | | 0.597 | | | | 0.627 |
| HI4 | Household savings were affected by COVID-19 containment measures | | | | | | |
| HI5 | Household consumptions were affected by COVID-19 containment measures | | | | | | |
| HI6 | Access and availability to loans were affected by COVID-19 containment measures | | | | | | |
| HI7 | Government tax adjustment on goods during COVID-19 period affected household income | | | | | | |
| SHR1 | Stay at home requirement affected income levels | 0.778 | | -0.406 | | 0.818 | |
| SHR2 | Sick leave for COVID-19 victims affected incomes | 0.732 | | -0.456 | | 0.828 | |
| SHR3 | Working from home affected productivity and incomes | 0.727 | | -0.437 | | 0.807 | |
| SHR4 | Staying at home to provide care to family members and friends affected by COVID-19 affected household incomes | 0.717 | | -0.451 | | 0.809 | |
| SHR5 | Self-quarantine affected household incomes | 0.662 | | -0.403 | | 0.738 | |
| SHR6 | Stay at home requirement by the government helped curb the spread of COVID-19 | | | | | | |
| WR1 | Workplace Restrictions affected income levels | 0.675 | | | 0.776 | | |
| WR2 | COVID-19 legal compliances affected income levels (i.e. Operation with issuance of COVID-19 compliance certificate) | 0.544 | | 0.488 | 0.762 | | |
| WR3 | Reduced working hours affected income levels (Curfews) | 0.684 | | | 0.737 | | |
| WR4 | Social distancing among coworkers, clients and customers at workplace affected household incomes | 0.664 | | 0.445 | 0.791 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| WR5 | Regular hand washing activities at the workplace affected income levels | 0.614 | | 0.441 | 0.761 | | |
| WR6 | Mandatory face masks at the workplace affected income levels | 0.593 | | 0.423 | 0.732 | | |
| WR7 | Workplace restrictions by the government helped curb the spread of COVID-19 | | | | | | |
| MR1 | Mobility Restrictions affected household income | | 0.701 | | | | 0.726 |
| MR2 | Lock down of counties and cities affected income levels | | 0.694 | | | | 0.716 |
| MR3 | Passenger number limits affected incomes | | 0.632 | | | | 0.652 |
| MR4 | Ban on international flights affected income levels | | 0.658 | | | | 0.703 |
| MR5 | Suspension of domestic flights affected income levels | | 0.627 | | | | 0.677 |
| MR6 | Mobility restrictions by the government helped curb the spread of COVID-19 | | | | | | |
| | Extraction Method: Principal Component Analysis. | | | | | | |
| | a. 3 components extracted. | | | | | | |

KMO and Bartlett's Test

| | | |
|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | | .839 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 4333.928 |
| | Df | 325 |
| | Sig. | .000 |

Source: (Survey, 2022)

The Kaiser-Meyer-Olkin (KMO) of .839 measure of sampling adequacy was above 0.5 while the Bartlett's test of Sphericity of 4333.93 and significant (at p =.000< .05) indicate that the correlation matrix of the original variables is not an identity matrix, thus indicating that a factor model is appropriate.

As a result, factor extraction was carried out using PCA. The method permitted the extraction of as many components as possible as long as each had an eigenvalue greater than two (the amount of variance each component explained). Rotation was used to improve the interpretability of the factors. An orthogonal procedure, Varimax (one that forces the components to be uncorrelated) rotations, and the best component structure were used. The factors' resulting component structures were left alone

because they theoretically make a lot of sense and account for a large portion of the variance in the observed variables (a threshold of 40%), or they were made simpler by eliminating variables that appeared unspecified because they either had a high cross-loading or a high standardized loading larger than 1 (Mann, 1995).

There are three options for computing factor scores and index construction namely surrogate variable, summated scale and regression methods (Heir *et al*., 2010). The study adopted summated scale which is advantageous in that it is a straightforward process, whereby items with high loadings (0.70 or greater) were summed up and averaged. Measurement errors were also reduced, and it increases representation of multiple facets of a concept.

Scree plot is a line plot of an analysis's eigenvalues for factors or principal components. Scree plots of eigenvalues is depicted in Figure 4.2

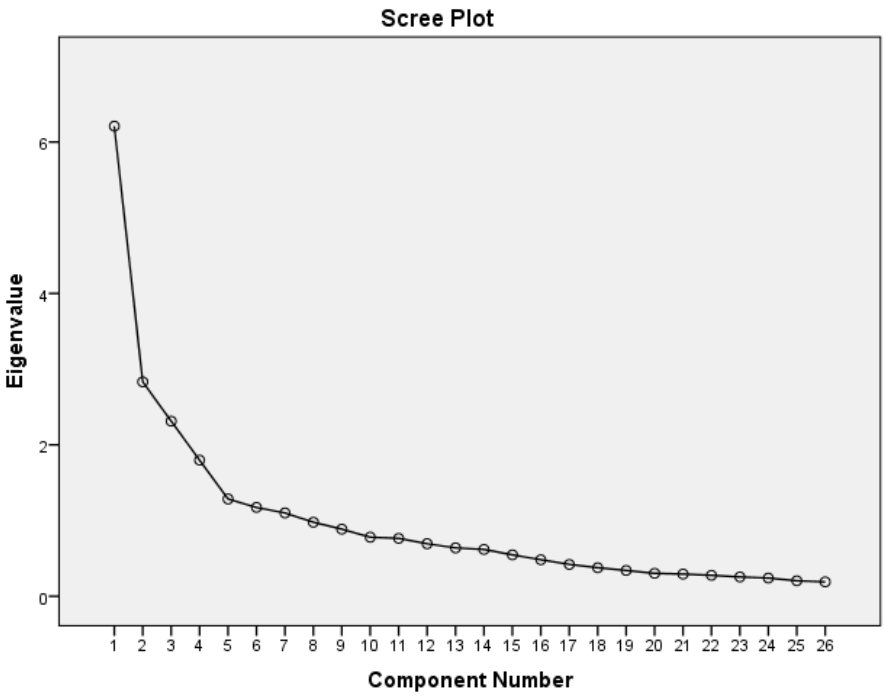


**Figure 4.2: Scree plot for Eigenvalues against a Number of Components**

Source: (Survey, 2022)

The results indicate that 3 factors were used to keep in a principal component analysis (PCA). The results indicated that components 1, 2 and 3 give high variability compared to other components.

### 4.7 Model Diagnostic Test

This study examined the key assumptions of multiple linear regression analysis. Specifically, tests were conducted to assess: linearity, to check if the relationship between dependent and independent variables is linear; normality, to determine if the regression residuals are normally distributed; multicollinearity, to identify high intercorrelations among the predictor variables; and homoskedasticity, to verify that the error terms exhibit equal variance across the values of the explanatory variables.

#### 4.7.1 Normality Test

The normality test diagram is presented in Figure 4.3

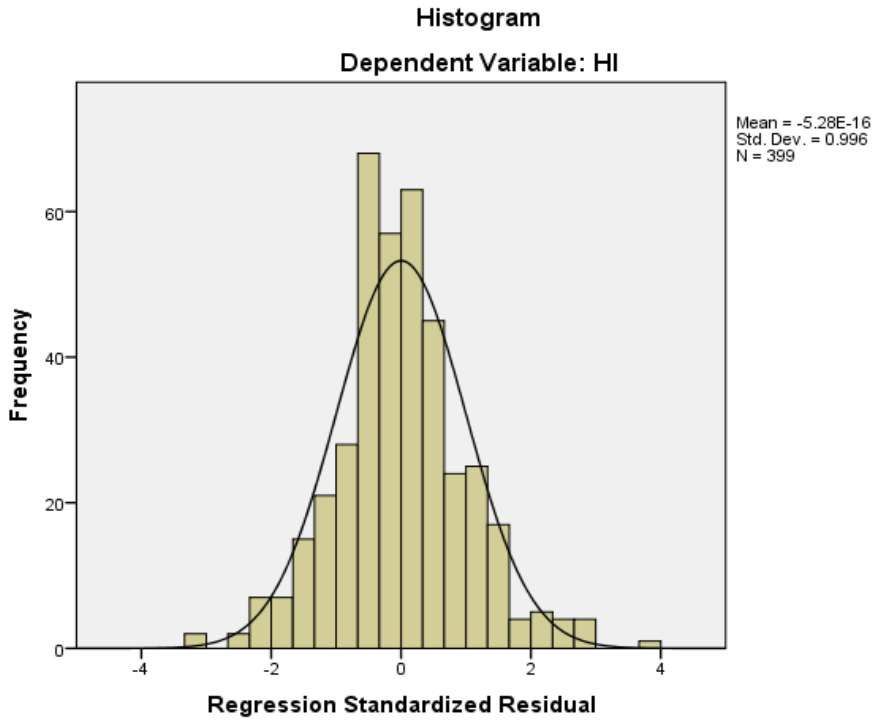


**Figure 4.3: Normality Test Results**

Source: Author, 2022

For accurate inferences from regression results, the residuals (error terms representing differences between actual and predicted dependent variable values) must follow a normal distribution. In the normality plot (Figure 4.4), the observed residuals aligned closely with the expected values along the diagonal line, indicating no major deviations. This suggests the residuals were approximately normally distributed, meeting this key assumption. As Garson (2012) notes, when regression assumptions are satisfied, the histogram of standardized residuals should display a normal curve shape. The histogram plot further confirmed normality, with the residual distribution exhibiting the expected bell curve pattern. Together, the normality and histogram plots verified the regression residuals were normally distributed, a critical assumption to validate the analysis. Normal residual distribution lends credibility to the regression results and conclusions.

### 4.7.2 Linearity Test

The first assumption in multiple regression is linearity where the independent variables must have a linear relationship with the dependent variable. Multiple regression can only accurately estimate the associations between predictors and outcome if these relationships are linear in nature (Garson, 2012). Nonlinear relationships violate this assumption, as regression coefficients rely on fitting a straight line to the data. To produce valid results, the regression model requires that changes in the explanatory variables correspond to a linear change in the response variable.

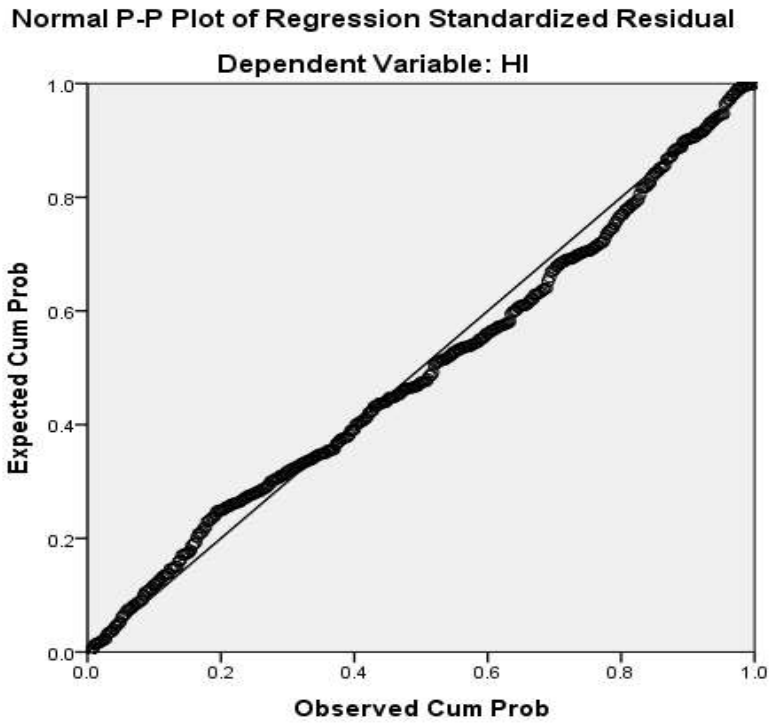


**Figure 4.4: Linearity Test Results**

Source: (Survey, 2022)

These scholars assert that if the association between the independent variables (IV) and the dependent variable (DV) is not linear, the regression analysis results will underestimate or overestimate the true relationship, increasing the likelihood of Type I or Type II errors. Linearity was tested using a simple examination of the P-P plot of the scores which showed that the scores fell neatly into a single straight line (Pallant, 2013). The results indicated that the assumption of linearity has been met and that the interpretation of the regression was legitimate.

### 4.7.3 Multicollinearity Test

The results for multicollinearity test is presented in Table 4.9

**Table 4.9: VIF Values**

| Independent variables | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| Stay at home restrictions (SHR) | 0.805 | 1.243 |
| Workplace restrictions (WR) | 0.822 | 1.216 |
| Mobility Restrictions (MR) | 0.975 | 1.026 |

Source: (Survey, 2022)

Multicollinearity occurs when independent variables in a regression model are correlated with each other. This violates the assumption that predictor variables are independently distributed**.** Multicollinearity makes it difficult to assess the individual impact of correlated variables on the dependent variable. One statistical method to detect multicollinearity is to calculate tolerance values for each independent variable. Tolerance is the proportion of variability in an independent variable not explained by its linear relationships with other independents in the model. Typically, a tolerance below 0.20 indicates problematic collinearity with that variable (Garson, 2012). An alternative diagnostic is the variance inflation factor (VIF) which quantifies how much variance is inflated due to collinearity. By convention, a VIF exceeding 10 indicates concerning collinearity with that predictor.

### 4.7.4 Homoscedasticity Test

The homoscedasticity test results is presented in Figure 4.5

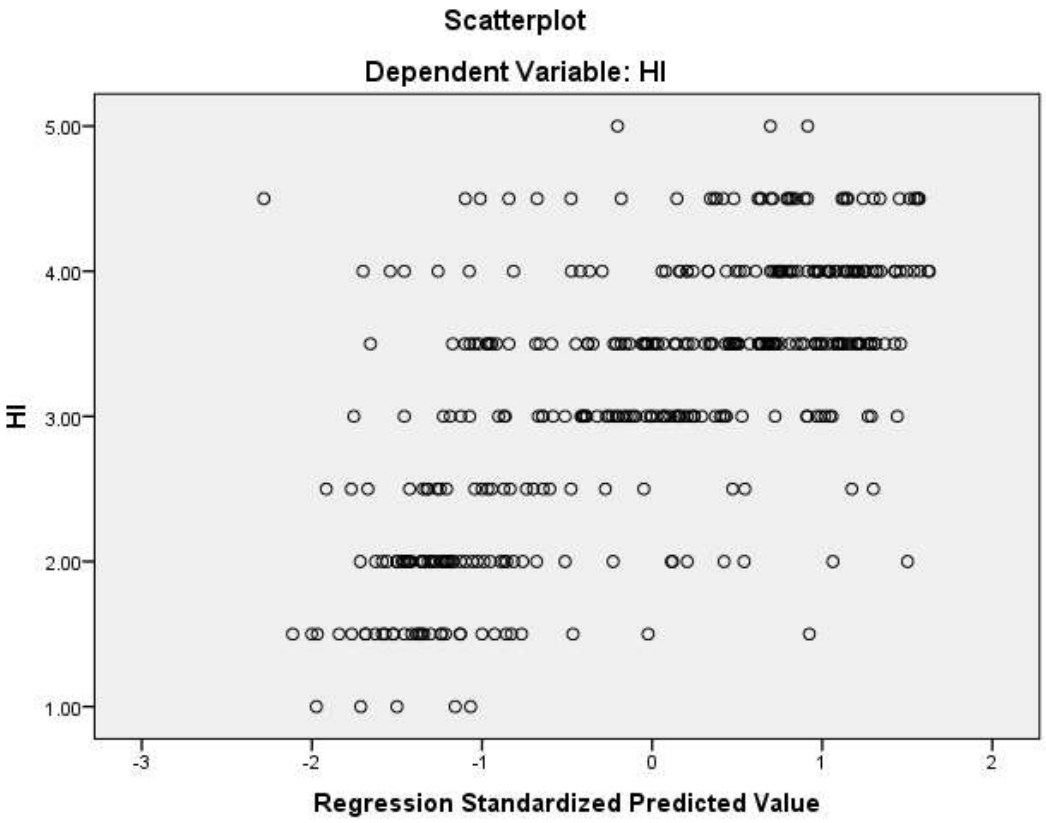


**Figure 4.5: Homoscedasticity Test Results**

Source: (Survey, 2022)

The data plot of standardized residuals verses standardized predicted values (Figure 4.5) revealed majorityresiduals are inside the suggested threshold, implying that the homoscedasticity assumption was met. Osborne and Waters (2002) agree, stating that residuals should be between -2 and/or +2 points.

### 4.8 Inferential Analysis

Having tested the assumptions of multiple regression, the study continued to make some inferential analysis, tested the hypothesis, interpreted the results and discussed in detail the information extracted. Some of the inferential analysis being discussed include correlation and OLS model. Pearson correlation was used. Correlation

identifies direction and magnitude of association whereas OLS gives the maximum likelihood estimation on the causal effect of stay-at-home requirement, workplace and mobility restrictions on household income.

### 4.8.1 Correlation Analysis

The results for correlation analysis is presented in Table 4.10

**Table 4.10: Pearson Correlation Coefficients**

| | | Correlations | | | |
|---|---|---|---|---|---|
| | | HI | SHR | WR | MR |
| HI | Pearson Correlation | 1 | | | |
| | Sig. (2-tailed) | | | | |
| SHR | Pearson Correlation | -0.570** | 1 | | |
| | Sig. (2-tailed) | 0.000 | | | |
| WR | Pearson Correlation | -0.539** | 0.421** | 1 | |
| | Sig. (2-tailed) | 0.000 | 0.000 | | |
| MR | Pearson Correlation | 0.130** | 0.159** | 0.060 | 1 |
| | Sig. (2-tailed) | 0.009 | 0.001 | 0.229 | |

**. Correlation is significant at the 0.05 level (2-tailed).

Source: (Survey, 2022)

The correlation analysis revealed a significant negative association between stay-at-home restrictions and household income at the 5% level ($\rho = -0.570, p < 0.05$). This indicates that increased stay-at-home requirements were correlated with declines in household income.

Workplace restrictions also had a significant and negative relationship at 5% level of significance ($\rho = -0.539, p < 0.05$). This implied that the more people were restricted at workplace, household income reduced.

Mobility restriction though positive and significant correlation with household income was weak $\rho = 0.130, p < 0.05$.

### 4.8.2 Model Estimation

Before testing for the hypotheses, ordinary least square model was estimated, and results are as shown in Table 4.11.

**Table 4.11: Regression Results**

| Model Summary | | | | |
|---|---|---|---|---|
| Model | R | R-Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | 0.660[a] | 0.435 | 0.431 | 0.69228 |

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 145.987 | 3 | 48.662 | 101.537 | 0.000 |
| | Residual | 189.307 | 395 | 0.479 | | |
| | Total | 335.293 | 398 | | | |

| Coefficients | | | | | |
|---|---|---|---|---|---|
| | Unstandardized Coefficients | | Standardized Coefficients | | |
| Model | Beta (β) | Std. Error | Beta (β) | Std Error | Sig. |
| (Constant) | 0.870 | 0.198 | | 4.403 | 0.000 |
| Stay at home restrictions (SHR) | -0.343 | 0.035 | -0.410 | -9.734 | 0.000 |
| Workplace restrictions (WR) | -0.366 | 0.042 | -0.363 | -8.717 | 0.000 |
| Mobility Restrictions (MR) | 0.051 | 0.045 | 0.043 | 1.120 | 0.263 |

Source: (Survey, 2022)

From the model estimation $ADJ.R^2 = 0.431$, $F-statistic = 101.537$ with a significant probability 0.000<0.05 indicated that the model used is robust and the explanatory variables fit the study. The R-squares indicate total variation of the dependent explained by the independent variables. The R-square of 0.435 implies that stay-at home requirement, workplace, and mobility restrictions explained 43.5 percent total variation of household income. It indicates these are major factors that contributed

household income decline among the residence of Uasin Gishu County. Results can be depicted inform of an equation as follows

$$Household\ Income = 0.870 - 0.343SHR - 0.366WR + 0.051MR$$

Where $SHR$= stay-at-home requirement, $WR$= workplace restrictions and $MR$ =the mobility restrictions.

The results revealed a positive and statistically significant intercept coefficient at the 5% level. As Everitt (2002) explains, the intercept represents the expected value of the dependent variable when all independent variables are zero. In the estimated regression equation, the intercept was 0.877, indicating the predicted household income when stay-at-home requirements, workplace constraints, and mobility restrictions were absent**.**

### 4.9 Interpretation and Discussion of Results

The regression results are discussed in the section.

#### 4.9.1 Effect of Stay-at-Home Requirement on Household Income In Uasin Gishu County, Kenya

The regression analysis found a negative and statistically significant relationship between stay-at-home requirements and household income ($\beta$=-0.343, $p<0.05$). This suggests that mandatory stay-at-home orders reduced incomes as people could no longer physically go to work. Employees who could work remotely often faced salary cuts, while those who previously earned overtime lost that additional pay. These income declines directly impacted living standards. The results align with Gondwe (2020), who argued that pandemic containment efforts in Africa reduced government revenue and merchandise exports, with exports projected to fall approximately 17% in 2020.

Stringent COVID-19 containment measures have substantially disrupted global flows of goods, services, and people with considerable impacts on trade and tourism, as concluded by Mueller et al. (2021). Analyzing food security in Kenya, Nechifor et al. (2021) argued such strict policies may disproportionately harm developing countries. Poor families with limited resources cannot work remotely and rely on income from daily labor. Lockdowns endanger them with plunging into abject poverty. Pinchoff et al. (2021) concluded COVID-19 has triggered one of the largest global economic downturns in decades, requiring years for recovery to pre-pandemic levels.

Turner (2010) found that pandemics directly alter consumer behavior through declining incomes and deteriorating household finances, as well as the accompanying fear and hysteria. Similarly, Nafees & Khan (2020) argued that disease control methods like lockdowns, while critical to suppress spread, have resulted in job losses and food shortages in underdeveloped nations. This creates a paradox - lockdowns are necessary to halt transmission and "flatten the curve", yet economically devastate vulnerable populations. While essential for public health, strict containment measures still entail economic repercussions that severely impact low-income individuals who struggle to survive the economic fallout.

The findings from this study contribute additional evidence on the effects of COVID-19 on income and food security at the local level. This research supplements statewide surveys tracking the real-time impacts of the pandemic on the economic livelihoods of Zambians in both rural and urban areas, as well as changes in food consumption patterns over time. The goal is to provide empirical data to inform government policy interventions. As Diao and Mahrt (2020) discuss, COVID-19 has severely disrupted health and economic systems globally, with differing impacts across sectors. Early

projections in 2020 suggested developing countries with historically vulnerable systems may be hardest hit, as the pandemic strains health, food, and economic infrastructures, exposing weaknesses.

### 4.9.2 Effect of Workplace Restriction on Household Income in Uasin Gishu County, Kenya

The regression results on workplace restriction coefficient on household income was negative and statistically significant, $-0.366$, $p = 0.000 < 0.05$. This means that when the government (National and County level) imposed the order that the employees should not go to their workstations, there was a significant loss of income. The results of the study tally with the findings of Bargain & Aminjonov (2021) on Poverty and COVID-19 in Africa and Latin America. The study found that Governments established shelter-in-place and physical distancing regulations in reaction to the global breakout of the COVID-19 pandemic. In the absence of a vaccine, such steps were necessary to halt the virus's spread. However, such stringent restrictions led to income losses.

Another study that got similar results is the study by Demeke, Kariuki & Wanjiru (2020). The study contended that the impact of Covid-19 on numerous economic sectors cannot be overstated. To name a few, tourism, trade, manufacturing, Micro and Small Enterprises (MSEs), transportation, and education have all suffered. Many Kenyans have lost their employment and livelihoods due to the COVID-19. Lagat, *et al.,* (2022) argued that due to the accompanying economic crisis, large job losses, high food prices, and rising demand for medical care, stay-at-home requirement may have an effect on food insecurity In addition to becoming a global pandemic and public health issue, Pak et al. (2020) came to the conclusion that COVID-19 has had a

substantial impact on the global economy and financial markets. Many countries' implementation of disease mitigation measures has led to considerable income declines, higher unemployment rates, and disruptions in a variety of economic sectors, to name a few of which are transportation, service, and industrial.

According to Zhang et al. (2020), the COVID-19 pandemic has had a direct effect on income due to early deaths, decreased productivity at work, and workplace absenteeism. It has also seen a negative supply shock as a result of global supply chain disruptions and industrial closures, which have halted production operations.

### 4.9.3 Effect of Mobility Restrictions on Household Income in Uasin Gishu County, Kenya

The regression results on mobility restrictions coefficient was $0.051$ , $p = 0.263 > 0.05$. This indicated that mobility restriction coefficient was not significant at 5% level of significance.

## 4.10 Hypothesis Testing Results

Applying Multiple Regression Approach, the stated hypothesis was stated on various issues in the study and the summary of the results were as follows.

***$H_{01}$***: *There is no significant effect of stay-at-home requirement on household Income in Uasin Gishu County, Kenya.*

The observed test statistic were $p = 0.000 < 0.05$ for the coefficient of stay at home restriction implying that stay at home restrictions influenced household incomes in Uasin Gishu County Kenya at 5% level of significance. Therefore, the null hypothesis relating to stay at home restriction was rejected at 5% level of significance.

***H*$_{02}$:** *There is no significant effect of workplace restrictions on household income in Uasin Gishu County, Kenya.*

The observed test statistics were $p = 0.000 < 0.05$ for the coefficient of workplace restriction implying that workplace restrictions influenced household incomes in Uasin Gishu County Kenya at 5% level of significance. Therefore, the null hypothesis relating to stay at home restriction was rejected at 5% level of significance.

***H*$_{03}$:** *There is no significant effect of mobility restriction on household income in Uasin Gishu County, Kenya.*

The observed test statistics were $p = 0.263 > 0.05$ for the coefficient of mobility restriction implying that mobility restrictions did not influence household incomes in Uasin Gishu County Kenya, at 5% level of significance. Therefore, the null hypothesis relating to stay at home restriction was not rejected at 5% level of significance.

# CHAPTER FIVE

# SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Overview

This concluding section recaps the study's main findings, outlines conclusions supported by the results, proposes recommendations, and notes avenues for further research. The key empirical results of the research are summarized and used to propose potential policy interventions to aid recovery from COVID-19's impact on household incomes in Uasin Gishu County. Additionally, opportunities for future research related to this topic are highlighted.

## 5.2 Summary of Findings

This study aimed to assess the impact of COVID-19 pandemic containment measures on household incomes in Uasin Gishu County, Kenya. To achieve this objective, the study used descriptive analysis, extensive review of theoretical foundations and empirical studies on household income. Further multiple regression approach was used to evaluate the influence of stay at home orders, workplace restrictions and mobility restrictions in Uasin Gishu, Kenya.

The study targeted 399 residence of Uasin Gishu County and used a structured questionnaire, of which all of them were properly filled and returned representing 100.00 percent response rate. Results revealed all the coefficients of the items. The internal reliability analysis yielded strong Cronbach's alpha coefficients for the key variable measures: 89.5% for household income, 86.3% for stay-at-home requirements, 82.3% for workplace closure policies, and 72.2% for mobility restrictions. This indicates acceptable inter-item consistency within each construct, confirming their reliability for the purposes of this study. Further, out of the 399

respondents interviewed male accounted for only 30.10 percent of the sample, with females accounting for 279 (69.90 percent). On age, the highest number of the affected respondents were aged between 36-45years (40.40%); followed by those aged between 18-35 years with (28.10%). Those falling below 18 of age cohort and those aged above 60 years were at 3.00% and 6.30% respectively. From the results, at least 71.40 percent of the respondents were age below 45 years. On marital status, 47.60 percent of respondents were married, 20.8 were divorced, and 17.50 percent widowed whereas 14.00 percent were single.

The R-square was 0.435 which implied that stay-at home requirement, workplace, and mobility restrictions explained 43.5 percent total variation of household income. This indicated that the contribution of COVID-19 containment measures in this study influenced household income among the residence of Uasin Gishu County, Kenya.

The findings showed a negative and statistically significant effect of stay-at-home requirements on household income. This implies that mandating people to stay home to curb the spread of coronavirus prevented many from working. Individuals able to work from home often faced salary reductions. Additionally, those previously earning overtime pay lost this supplemental income. Together, these impacts of stay-at-home orders led to declines in total household earnings, directly affecting living standards.

The regression results on workplace restriction on household income were negative and statistically significant. This meant that when the government (National and County level) imposed the order that the employees should not go to their workstations, there was a significant loss of income.

The results indicated that the coefficient of mobility restriction was not significant at 5 % level of significance. This meant that the imposition of mobility restrictions did not influence household income in Uasin, Gishu County Kenya.

### 5.3 Conclusions

This study utilized multiple regression analysis to assess the effects of COVID-19 containment measures on household income in Uasin Gishu County, Kenya.

The first objective was to examine the impact of stay-at-home requirements on household income. The test statistics showed the stay-at-home coefficient was negative and statistically significant $-0.343$, $p = 0.000 < 0.05$. This signifies that stay-at-home mandates negatively influenced household incomes in Uasin Gishu County during the pandemic.

The second objective was to determine the effect of workplace restrictions on household income in Uasin Gishu County. The regression results showed a negative and statistically significant coefficient for workplace restrictions $-0.366$, $p = 0.000 < 0.05$. This indicates that government-imposed orders for employees to avoid their workplaces significantly reduced household earnings.

The third objective examined how mobility restrictions affected income. The regression coefficient for mobility limitations was positive but not statistically significant $0.051$, $p = 0.263 > 0.05$. This signifies that the mobility restriction variable did not have a demonstrable significant impact on household income at the 5% level.

## 5.4 Recommendations

In light of the study findings and aligned with the stated objectives, the following recommendations are proposed:

As a primary activity in the government response, it is necessary to create an environment that supports both formal and informal (primarily farming, non-farm wage income, and trading) revenue streams in order to improve food access. Targeted monetary and fiscal incentives could be offered to ensure certain vital economic activities that may enhance disadvantaged households' resilience and food security which were caused by the COVID-19 restrictions. Since stay-at-home requirements have had a negative effect on household income, the government's response is still mostly fixated on the formal industry, and this could be changed by offering a safety net for informal sector employees to enhance the nation's capacity to respond appropriately to sustaining livelihoods safely while also inhibiting additional community spread. To serve a broad range of beneficiaries, these findings showed that targeting should be a fundamental element of the design and execution of social protection programs and economic recovery strategies. Rural farming households and impoverished households, nonagricultural households and households in the middle quintiles of income, could be among the beneficiaries and especially those who may have been impacted by the COVID-19 restrictions.

## 5.5 Policy Implications

The empirical findings from this study offer valuable insights for policymakers examining the effects of COVID-19 containment measures on household incomes in Uasin Gishu County, Kenya.

Specifically, the results revealed the stay-at-home requirement coefficient had a statistically significant negative effect on household income. This indicates that mandating people to stay at home reduced total earnings for households in Uasin Gishu County during the pandemic. The Kenyan national and county governments should adopt policy options to support employees working from home so that incomes are not affected by stay at home directives. Besides, the national and county governments should institute paid sick leave policies to help the individuals infected by the virus with continued income flow.

Considering the results showed that the coefficient of work place restriction had a negative influence on household income in Uasin Gishu County, Kenya, the County government of Uasin-Gishu should enact and pass laws which are focused in assisting employers and employees overcome the effects of workplace restrictions on incomes. Government could introduce a policy that could cushion business owners so that they could continue operating and retain their workforce hence household income would not be substantially affected. The COVID-19 workplace restrictions should also be revised to allow people and businesses to operate within the stipulated requirement hence promoting household income.

### 5.6 Limitations of the Study and Suggestions for Future Research

While this study was successfully conducted, some limitations provide opportunities for future research.

First, the regression model did not incorporate variables for political factors or vaccination effects. Subsequent analyses could include these elements to assess their impacts on household income.

Secondly, additional macroeconomic variables beyond just COVID-19 containment measures could influence incomes in Uasin Gishu County. The model did not account for other potential economic factors. They include education level and economic sectors, which were not utilized in the study. Future research could include these variables

Thirdly, this study utilized Ordinary Least Squares regression for analysis. Future research could apply other modeling techniques such as Generalized Method of Moments to analyze similar data. Comparing results across different estimation methods may provide additional insights.

Additionally, this study examined data during the COVID-19 pandemic through 2021. Further research should investigate post-pandemic time periods after restrictions were lifted to understand how household incomes changed following the acute phase of the pandemic. Analyzing household income trends in the post-COVID period would reveal whether pandemic impacts were temporary or more persistent.

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# APPENDICES

## A. 1: Questionnaire

**Dear Respondent,**

My name is Peris Jerop Talam. I am a master's degree student at Moi University conducting research titled, “Effect of COVID-19 Stringent Containment Measures on Household Incomes in Uasin Gishu County, Kenya”. This is a scholarly study, and all data gathered will be used solely for this purpose. You were chosen to take part in this study due to your extensive knowledge in this field. Your response will be handled with complete confidentiality. I have paraphrased this introduction while preserving the key details. Thank you.

1. Please tick or fill in the spaces provided appropriately.
2. Please do not disclose your identity by providing your name or phone number on the questionnaire

**SECTION A: DEMOGRAPHIC INFORMATION**

1. Kindly Choose the age bracket you belong to
   - Below 18 yrs
   - 18 – 35 yrs
   - 36 – 45 yrs
   - 46 – 60 yrs
   - Above 60 yrs
2. Select your appropriate gender
   - Male
   - Female
3. What is your marital status?
   - Married 15
   - Widowed
   - Divorced
   - Single
4. What is your highest educational qualification?
   - University
   - Diploma
   - Certificate

- Secondary School Certificate
- Primary School Certificate
- Informal

5. Which Sub-County do you reside?
   - Ainabkoi
   - Kapseret
   - Moiben
   - Turbo
   - Soy
   - Kesses
6. How many people live in your house *(Households size; people living and eating in that house)?* _____
7. What do you do for a living?
   - Farming
   - Salaried Employment
   - Self-Employment
   - Wage Employment
   - Unemployed
   - Others
8. What is your average income per month?
   - Below Khs.5000
   - Ksh 5001- 20000
   - Ksh 20001- 50000
   - Ksh 50000- 100000
   - Above Ksh 100000

**SECTION B: Effect of Stay at Home Requirement on Household Incomes**

This Section Contains items and statements on the effects of stay at home requirement on household incomes that require you to rate in a Likert scale of 5 to 1 depending on your level of agreement as follows; Strongly Agree (5) Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1).

| **Item** | **Statement** | **Strongly Agree(5)** | **Agree (4)** | **Neutral (3)** | **Disagree (2)** | **Strongly Disagree(1)** |
|---|---|---|---|---|---|---|
| SHR1 | Stay at home requirement affected income levels | | | | | |
| SHR2 | Sick leave for COVID-19 victims affected incomes | | | | | |
| SHR3 | Working from home affected productivity and incomes | | | | | |
| SHR4 | Staying at home to provide care to family members and friends affected by COVID-19 affected household incomes | | | | | |
| SHR5 | Self-quarantine affected household incomes | | | | | |
| SHR6 | Stay at home requirement by the government helped curb the spread of COVID-19 | | | | | |

**SECTION C: Effect of Workplace Restrictions on Household Incomes**

This Section Contains items and statements on the effects of workplace restrictions on household incomes that require you to rate in a Likert scale of 5 to 1 depending on your level of agreement as follows; Strongly Agree (5) Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1).

| **Item** | **Statement** | **Strongly Agree(5)** | **Agree (4)** | **Neutral (3)** | **Disagree (2)** | **Strongly Disagree(1)** |
|---|---|---|---|---|---|---|
| WR1 | Workplace Restrictions affected income levels | | | | | |
| WR2 | COVID-19 legal compliances affected income levels (i.e. Operation with issuance of COVID-19 compliance certificate) | | | | | |
| WR3 | Reduced working hours affected income levels (Curfews) | | | | | |
| WR4 | Social distancing among coworkers, clients and customers at workplace affected household incomes | | | | | |
| WR5 | Regular hand washing activities at the workplace affected income levels | | | | | |
| WR6 | Mandatory face masks at the workplace affected income levels | | | | | |
| WR7 | Work place restrictions by the government helped curb the spread of COVID-19 | | | | | |

**SECTION D: Effect of Mobility Restrictions on Household Incomes**

This Section Contains items and statements on the effects of mobility restrictions on household incomes that require you to rate in a Likert scale of 5 to 1 depending on your level of agreement as follows; Strongly Agree (5) Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1).

| **Item** | **Statement** | **Strongly Agree(5)** | **Agree (4)** | **Neutral (3)** | **Disagree (2)** | **Strongly Disagree(1)** |
|---|---|---|---|---|---|---|
| MR1 | Mobility Restrictions affected household income | | | | | |
| MR2 | Lock down of counties and cities affected income levels | | | | | |
| MR3 | Passenger number limits affected incomes | | | | | |
| MR4 | Ban on international flights affected income levels | | | | | |
| MR5 | Suspension of domestic flights affected income levels | | | | | |
| MR6 | Mobility restrictions by the government helped curb the spread of COVID-19 | | | | | |

**SECTION E: Household Incomes**

This Section Contains items and statements about household incomes that require you to rate in a Likert scale of 5 to 1 depending on your level of agreement as follows; Strongly Agree (5) Agree (4), Neutral (3), Disagree (2), Strongly Disagree (1).

| **Item** | **Statement** | **Strongly Agree(5)** | **Agree (4)** | **Neutral (3)** | **Disagree (2)** | **Strongly Disagree(1)** |
|---|---|---|---|---|---|---|
| HI1 | Income levels were affected because of stay at home requirement (i.e. working from home and sick leaves) | | | | | |
| HI2 | Income levels were affected because of workplace restriction | | | | | |
| HI3 | Income levels were affected because of mobility restrictions | | | | | |
| HI4 | Household savings were affected by COVID-19 containment measures | | | | | |
| HI5 | Household consumption were affected by COVID-19 containment measures | | | | | |
| HI6 | Access and availability to loans were affected by COVID-19 containment measures | | | | | |
| HI7 | Government tax adjustment on goods during COVID-19 period affected household income | | | | | |

What measure should be undertaken to help recovery

_____

## A. 2: Letter of Introduction

**MOI UNIVERSITY**
SCHOOL OF BUSINESS AND ECONOMICS
POSTGRADUATE OFFICE

Tel: 0790940508
0771336914
0736138770
Fax No: (053) 43360
Telex No. MOIVARSITY

P.o Box 3900
Eldoret
Kenya

**REF:** MS/ECON/5354/21 DATE: 24th March, 2022

**TO WHOM IT MAY CONCERN**

Dear Sir/Madam,

**RE: PERIS TALAM – MS/ECON/5354/21**

The above named is a bonafide student of Moi University, School of Business and Economics undertaking a Master of Arts in Economics.

She has completed course work, defended proposal and is proceeding to the field to collect data for her research entitled: ***Effect of Covid-19 Stringent Measures on Household income in Uasin Gishu County***

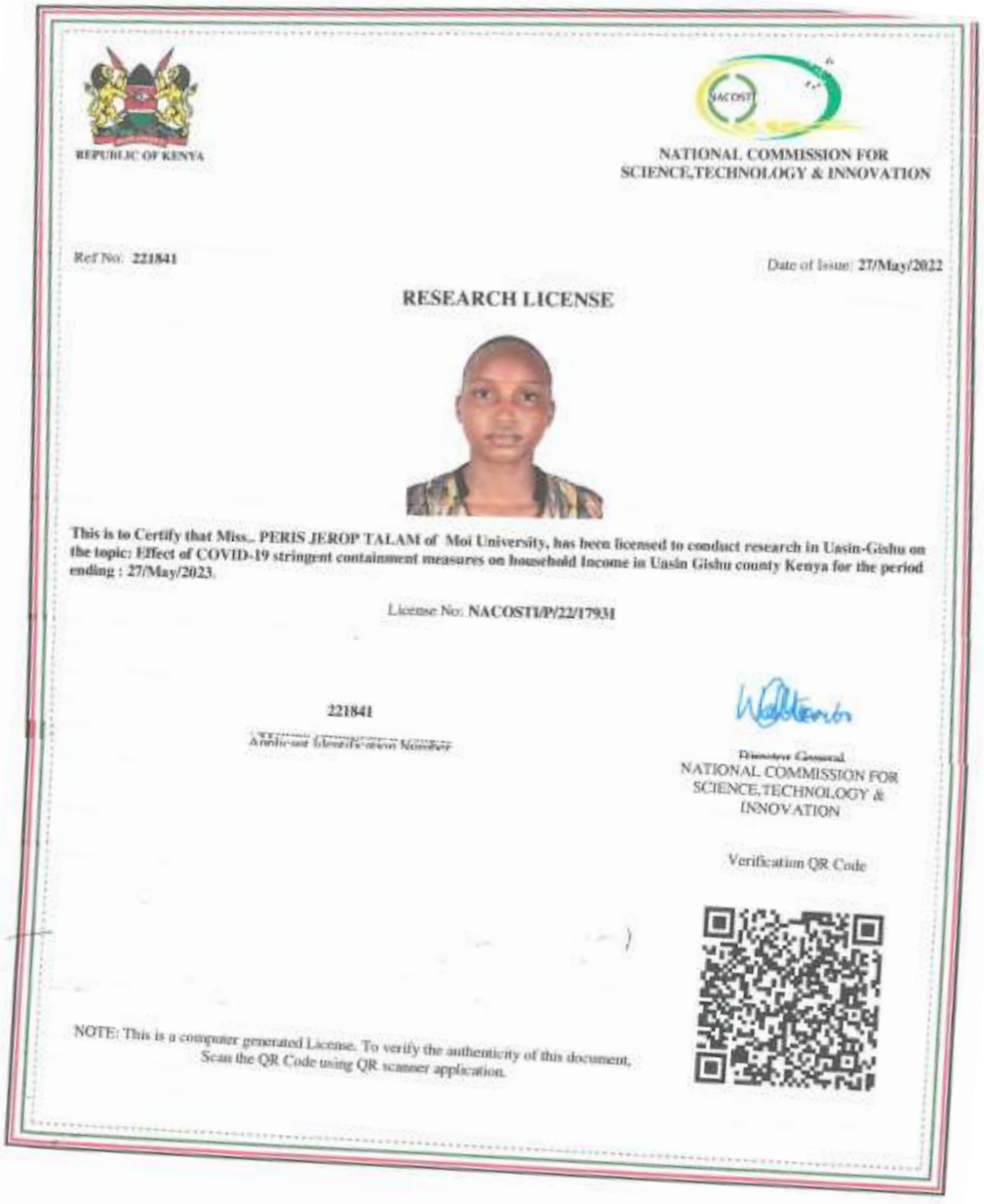
Any assistance accorded to her will be highly appreciated.

Yours faithfully,

SCHOOL OF BUSINESS & ECONOMICS
MOI UNIVERSITY
P.O Box 3900 ELDORET 30100

**Dr. RONALD BONUKE**
**ASSOCIATE DEAN AND CHAIRPERSON POSTGRADUATE, SCHOOL OF BUSINESS AND ECONOMICS**

## A. 3: NACOSTI



REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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Date of Issue: 27/May/2022

RESEARCH LICENSE

This is to Certify that Miss.. PERIS JEROP TALAM of Moi University, has been licensed to conduct research in Uasin-Gishu on the topic: Effect of COVID-19 stringent containment measures on household Income in Uasin Gishu county Kenya for the period ending : 27/May/2023.

License No: NACOSTI/P/22/17931

221841

Applicant Identification Number

Director General
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**A. 4: Map of Uasin Gishu County, Kenya**